TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

Vol. 21.] 1924. [No. 1.

TROPICAL DERMATOLOGY.

OHO (O.). **Ueber die Hautkrankheiten in Nordformosa und einige therapeutische Bemerkungen ueber dieselben.** [Skin Diseases in Northern Formosa and some Therapeutical Notes on them.]—*Trans. 4th Congress of the Far Eastern Assoc. of Trop. Med.* 1921. Vol 2. pp. 149–168.

A list comprising 9,451 cases of skin diseases is given in tabulated form, arranged according to their monthly incidence and occurrence in the sexes. With the exception of the more unusually encountered diseases such as Tinea imbricata, the large majority of skin diseases observed in this district are of cosmopolitan nature. Cases of eczema occur in large numbers especially during the summer months. Under the designation " dermatitis exsiccans palmaris " is described a chronic affection of the flexural surfaces of the fingers and palms especially of the right hand, occurring chiefly in women and on tender skins, and improving in the summer. The clinical and histological appearances are those of eczema, while subjective symptoms are very few. This condition is ascribed to a fungus infection in spite of repeated negative findings. The appellation " dermatitis ruberrima " is given to an eruption of numerous very small pustules arranged in a streak-formed distribution chiefly on the uncovered parts of the body. Histologically the lesions show alterations in the epidermis as low as the stratum malpighii, with perivascular infiltrations in the papillary layer. It is suggested that this affection may be due to the irritation of some poisonous material from insects. Insect bites are common especially of a *Ceratopogon*. In the warm weather, particularly, eczema marginatum is of frequent occurrence especially about the buttocks and lumbar region, while it is noted that in Southern Formosa the condition frequently is seen on the neck alone. " Pityriasis rotunda " is mentioned as attacking only the Japanese. Under the denomination " eczema scroti parasitarium " a condition is described as occurring in epidemic form in young people, of small round scaly macules, becoming confluent, on both sides of the scrotum and on the shaft of the penis in contact with it. In the scales from these lesions a fine mycelium is easily recognised to which the name " microsporon brachytomum " is provisionally given. This fungus has been cultivated and successful inoculation experiments with the same have been

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carried out by the writer. The mycelium grown from cases of T. imbricata showed cultures giving the appearance described of *E. concentricum* (Castellani). Ulcus tropicum is not so often seen as formerly and now prevails among the lower classes. Scabies is very prevalent, and for this infection treatment by the application to the whole body for two days of a watery solution of "desinfektol" 20 per cent. with 10 per cent. precipitated sulphur is recommended.

Wm. Jenkins Oliver.

FONTOYNONT (Maurice) & BOUCHER (Humbert). **Contribution à l'étude des mycoses de Madagascar.**—*Ann. de Dermat. et de Syph.* 1923. Apr., May. 6th Series. Vol. 4. Nos. 4 & 5. pp. 209–235 With 3 figs. pp. 318–344. With 7 figs.

This long article is based on the observation and laboratory examination of 11 cases of mycotic infection. Four main groups of fungus are described, viz.:—Sporotrichum, Cryptococcus, Mycoderma and Acremonium.

Sporotrichum.—While not infrequent among horses, cases of infection with mycoses of this genus are rare in man. Two cases of this series were infections of *S. beurmannii* and *S. gougeroti* respectively. Attention is drawn to the picture common to all scars following deep mycotic lesions of the destruction of the hypoderm under an apparently healthy epidermis giving rise to a wrinkled appearance of the skin.

Cryptococcus.—Three new species are described. Three cases were infections of *C. mena.* The lesions resembled syphilitic and tuberculous ulcerations of the skin and occurred on the feet, legs, face, and on the trunk about the left breast and axilla with abscess formation following lymphangitis. Treatment by the internal administration of methylene blue (10 cgm. in cachet daily) and the local application of a 1 per cent. solution of the same acted as a specific. A cultural characteristic of this species was the rose colour on glucose agar, becoming more pronounced as the cultures became denser. On maltose agar the colour was always rose-brown. Liquefaction of gelatine and the absolutely smooth membrane of the yeast elements distinguished this species from *Saccharomyces granulatus.* The rose pigment of *C. mena* was no more constant than the yellow pigment of Staphylococcus. The agglutination reaction, to be a positive one, appeared to be dependent upon the presence of methylene blue in the mixture. The experimental effects of passage through four series of animals are described. This species appears to resemble *C. ruber* closely.

C. bernasconi occasioned two cases. One showed a mycotic chancre-like lesion on the face, while the other exhibited extensive ulcerations of the skin of the thorax with multiple suppurative adenitis of the cervical and axillary glands. Cultures of this fungus were white on all media. The cultural and microscopical appearances are described together with inoculation experiments. One positive retroculture was obtained.

C. fuscus was isolated from a case resembling a mycetoma of the foot and from an ecthyma of the leg following a prick from an agave. On culture a growth of a white creamy tint passing through brown to a caramel colour towards the end of the second month was characteristic of this species. Liquefaction of gelatine occurred. Inoculation experiments into animals are described. Retroculture from the intestine of one pigeon was positive.

Mycoderma rabesalama. The case was a pulmonary infection giving rise to haemoptysis and pulmonary abcesses with a dark colored expectoration mixed with blood, having a stale odour and showing white caseous-like granules. The death of this patient occurred after three years' duration of the illness. The cultures and microscopical appearance of the fungus obtained from the sputum are described, as are also the negative retrocultures from inoculations into animals and the positive complement deviation in the patient's serum. This is the first case of infection by this fungus to be reported from Madagascar.

Acremonium muthuoni. The case showed two nodular lesions in the nuchal region with discrete papular lesions on the scalp. The histological appearance is described together with the cultural characteristics of this new species. A partial deviation of the complement was obtained in the serum. A retroculture was positive from the peritoneal surface in the case of one guinea-pig.

W. J. O.

CASTELLANI (Aldo) & WILKINSON (A. Geden). **Trichomycosis Axillaris Flava, Rubra and Nigra.**—*Jl. Trop. Med. & Hyg.* 1923. June 1. Vol. 26. No. 11. pp. 186–190. With 1 coloured plate and 3 figs. [8 refs.]

The varieties of the trichomycoses affecting the axillary and pubic hairs are described with their particular cultural and clinical features, together with the microscopical appearance of the affected hairs. While T. flava and T. rubra affect axillary and pubic hairs, the authors have observed no case with the pubic hair showing T. nigra. Mixed types may occur. Hyperidrosis is common but only in one case had chromidrosis been observed in association with trichomycosis. An erythematous condition of the axillae and a yellow discolouration of the skin in that region had been noted as complications. In such a discoloured patch a nocardial fungus has been demonstrated in one case. The differential diagnosis is discussed with the prognosis and treatment of the condition. The paper is accompanied by an admirable coloured plate.

W. J. O.

LEGER (Marcel) & NOGUE (Maurice). **Mycose à *Scopulariopsis* chez deux malades ayant des lésions cutanées rappelant la lèpre.**—*Bull. Soc. Path. Exot.* 1922. July 12. Vol. 15. No. 7. pp. 654–661. With 3 text figs. [3 refs.]

Report of two cases, of 15 and 10 years' duration respectively, from which the same fungus was isolated. In neither case was there any family history of leprosy.

The first case was a man showing a raised circumscribed red plaque with a steep outer edge on the central part of the forehead and invading the hairy scalp, raised scaly circumscribed lesions on the forearms in glove-like distribution, hyperkeratosis of the palms with trophic disturbances of the nails of the fingers which were flexed and could not be completely extended. Removal of the scales revealed a darker black tint of the underlying than of the healthy skin. Similar circumscribed less pronounced lesions on the dorsal surfaces of the feet and lower part of the legs. Radiological examination showed some decalcification of the bones of the hands especially about the epiphyses. The nerves in the elbow regions were palpably thickened without any nodosities.

The second case was that of a woman with similar but less pronounced lesions on the face involving the forehead, cheeks and nose, the dorsal surfaces of both hands of the fingers where the skin was dry, shiny black and desquamating; palmar hyperkeratosis and deformed finger nails. Slight pruritus. Nerves not hypertrophied. Old syphilitic scars about left axilla. In both patients the Wassermann reaction was positive.

In neither case were *B. leprae* isolated from the skin lesions or from the nasal mucus nor was there any alteration of sensation over the areas of affected skin. While the diagnosis of leprosy in these two patients could not be entirely ruled out the condition was believed to be a mycotic infection in consideration of the isolation of a fungus from the scales and from the definite improvement following the local application of an ointment containing chrysophanic acid.

Cultures on Sabouraud's medium appeared in 5–6 days at laboratory temperature as a dirty-white felted growth which grew rapidly to take up a wavy formation and at the same time became green in colour to appear later of a darker slaty grey tint. More detailed cultural and microscopical characteristics are described, and the denomination of this fungus is discussed.

W. J. O.

NEVES (Aroeira). **Contribuição ao estudo das dermatomycoses em Bello Horizonte. Observações sobre casos provocados pelo *Microsporon felineum*, C. Fox e F. Blaxall 1896.** [Dermatomycoses in Bello Horizonte due to *Microsporon felineum*, Fox and Blaxall, 1896.]—*Brazil Medico.* 1923. Mar. 17. Year 37. Vol. 1. No. 11. pp. 144–149.

Details are given of eleven cases of skin affection associated with *M. felineum*. Among these there was only one adult. Cultures of the organism were obtained in each case. In eight the disease was confined to the smooth skin, the scalp being affected in three only. The same organism was isolated from sores on 10 cats and 2 dogs living in close contact with the patients.

H. Harold Scott.

FRASER (A. Reith). **A Specialized Favoid Scalp Condition peculiar to the Syphilitic Native of South Africa.**—*Brit. Jl. Dermat. & Syph.* 1922. Aug.–Sept. Vol. 34. Nos. 8/9. (Nos. 406/7). pp. 267–274. With 2 plates.

Account of a chronic, dry, white-crusted condition of the scalp found only in syphilitic natives of South Africa, the large majority of cases occurring among the heredosyphilitics in British Bechuanaland. The commonest incidence is between the ages of 2 and 10 years and is commonly associated with other signs of heredosyphilis such as anal condylomata, chronic rhinitis and "mulberry molar." Commencing on the scalp as isolated syphilitic macules which become papular then pustular, the crusted lesions coalesce to cover the greater part of the scalp. The layers forming the crusts are firmly bound together so that the hairs through trophic changes become brittle and then fall, when the whole scalp may appear denuded of hair "except round the nape of the neck and in front of the ears. When a crust is raised or removed, a red non-inflamed denuded surface is revealed, practically devoid of serous or sanguineous exudate." No subjective symptoms accompany the disease, nor is it contagious.

After persisting for years, the crusted lesions if left alone may disappear about puberty with the other manifestations of the congenital disease. Under antisyphilitic treatment the condition improves and may entirely clear up, to relapse later. MITCHELL and ROBERTSON from four long-standing cases have isolated a fungus resembling *Achorion Schönleinii*, but this is probably a secondary contamination, since it is difficult to account for the non-irritating and non-contagious nature of the affection if due to a local fungus infection. The exact relation of the *Spironema pallidum* to the condition is undetermined. The disease, known locally as *wit kop*, has been observed by the writer in an adult native with acquired syphilis.

W. J. O.

CASTELLANI (Aldo). **L'étiologie du Tokelau.**—*Bull. Soc. Path. Exot.* 1923. Feb. 14. Vol. 16. No. 2. pp. 111–118. With 1 plate & 2 figs. [4 refs.]

The causal parasite of Tokelau ringworm is a fungus growing among the cells of the superficial and prickle-cell layers of the epidermis. Botanically this *Endodermophyton* is closely related to the *Achorion*. Three main types have been isolated and named by the writer, viz. :— *E. tropicale, E. indicum* and *E. concentricum*. The cultural characteristics of the two first varieties are described in some detail and compared. Emphasis is laid upon the necessity of not using corked or rubber-covered tubes in making the cultures, and upon the advisability of employing only young cultures for experimental inoculations. Other fungi, such as Aspergilli, which have been found in the scales are merely saprophytic contaminations.

W. J. O.

SILVA (Flaviano). **Intertrigo saccharomycetico.**—*Brazil Medico.* 1923. Aug. 25. Year 37. Vol. 2. No. 8. pp. 119–127. With 5 figs. [20 refs.]

The term " Intertrigo " is used to designate a group of skin lesions resulting from friction originated by a variety of causes such as irritant secretions—sweat, urine—or external irritants as chemicals, bacteria, or fungi. In the present paper the author deals only with mycotic intertrigo.

Two cases are recorded, one of interdigital and one of genito-crural intertrigo ; from the lesions in each case a blastomycotic organism of the Saccharomyces group was isolated and grown on Sabouraud's medium, but was not identified. The history, symptomatology, differential diagnosis and treatment of the condition in general are given, chiefly from the writings of various authors.

H. Harold Scott.

DE MAGALHAES (Octavio) & NEVES (Aroeira). **Contribution à l'étude des teignes au Brésil** (*Trichophyton multicolor* **n. sp.**).—*C.R. Soc. Biol.* 1923. Oct. 13. Vol. 89. No. 27. pp. 769–772. With 1 fig.

Report of a case of ringworm of the scalp of eight months' duration occurring in a child aged 10 years. Direct examination of the hairs and scales were negative while cultural examinations were positive. On Sabouraud's maltose medium the cultures showed a cerebriform

(occasionally crateriform) growth, ochre-coloured in the centre with an intermediate rose-tinted zone and an outer border of snow white colour, which outer zone might later (at 25 days) become salmon coloured. The cultures at first "downy" later showed a powdery surface. The cultural characteristics on other media and the biological appearances of the fungus are described. Pleomorphism occurred on all the media employed. Animal inoculations were positive. The fungus was shown to be an endo-ectothrix and should therefore be placed in the neo-endothrix group of Sabouraud's schema. The clinical and cultural characteristics of this trichophyton, to which the designation *T. multicolor* is given are very briefly compared with those of *T. cerebriforme* and *T. plicatile* (SABOURAUD).

W. J. O.

LYNCH (Kenneth M.). **Aspergillus in Scalp Lesions following Red-Bug (Leptus) Bites.**—*Arch. Dermat. & Syph.* 1923. May. Vol. 7. No. 5. pp. 599–602. With 1 text fig.

A brief account of the activities of the "red-bug" is given. From the heaped up crusted lesions on the scalp a fungus was obtained and shown to be *Aspergillus fumigatus* which was considered to be the cause of the continued formation of the crusted lesions at the site of the bites on the scalps of children. The hairs were not infected. Treatment with sulphur ointment, after removal of the crusts, caused disappearance of the lesions in 10–14 days.

W. J. O.

SCHMITTER (Ferdinand). **The Aetiological Fungi of Tinea Versicolor and Tinea Flava.**—*Jl. Trop. Med. & Hyg.* 1923. June 1. Vol. 26. No. 11. pp. 190–194. With 3 text figs.

The cultural characteristics of the fungus obtained from four cases of Tinea versicolor and from one case of Tinea flava are described. The conclusion is drawn that the causal fungi of these two conditions are different species of a similar organism.

W. J. O.

CASTELLANI (Aldo) & TEJERA (Henri). **Note on the Etiology of "Cute."**—*Jl. Trop. Med. & Hyg.* 1923. June 1. Vol. 26. No. 11. pp. 183–184. With 1 text fig.

In a case reported from Venezuela, scrapings from the yellow patches examined in liquor potassae showed the presence of scanty spore-like bodies with few mycelial particles resembling in appearance the fungus described from the condition of Tinea flava.

W. J. O.

REISS (Friedrich). **Eine eigenartige Nagelmykose in China (Onycholysis trichophytica).** [A Peculiar Mycosis of the Nails in China]. —*Dermat. Woch.* 1923. July 21. Vol. 77. No. 29. pp. 891–892. With 1 fig.

Case report of a man whose nails on the index, middle and little fingers of the right hand had been gradually for one year, undergoing the present, changed appearance. Seven years previously he had had ringworm of the body, but the nails had not been affected at that time. Now the three above named fingers showed small, half-moon shaped, raised remains of the nails with some slight swelling of the nail fold. Scraping and

microscopical examination revealed the presence of fungus in considerable amount, which cultures and inoculation experiments proved to be an endo-ectothrix resembling Trichophyton A and Trichophyton B described by Ota as occurring in Manchuria. The relation of the present to the past infection was obscure.

W. J. O.

Valenzuela (A. J.). **Clínica Médica del Hospital General de Guayaquil. Tercera Conferencia Esporotricosis. Primer caso señalado en el Ecuador.**—26 pp. With 13 plates. [24 refs.] 1922. Guayaquil: Tipografia de Julio T. Foyain—Avda, "10 de Agosto" 220.

The case is described of a girl, 8 years of age, who sustained an incised wound of the foot. Bleeding was profuse and the wound slow to heal, so that three months later there was a small, painless swelling with an ulcerating surface. This became crateriform with undermined edges and was at first thought to be a leishmanial infection. Cultivation of the discharge on Sabouraud's medium gave a growth of "Rhizomucor" which, if it prove to be a new species, the author proposes (regardless of concord) to name *Rhinocladium guayaquilensis*. Treatment with iodides gave excellent results. The case is of interest as being the first recorded of Sporotrichosis in Ecuador.

H. Harold Scott.

Brun (R. G.), Broc (R.), Burnet (Et.), Anderson (Ch.) & Solovief (P.). **Trois nouveaux cas de mycétome (pied de Madura) observés en Tunisie.**—*Arch. Inst. Pasteur de Tunis.* 1923. July. Vol. 12. No. 2. pp. 199–204. With 1 plate. [1 ref.]

Reports of three cases of mycetoma of the foot due to *Discomyces madurae*, the parasite being found microscopically in one case and grown in cultures from the other two cases. This account raises to the number of seven the cases observed in Tunis due to Discomyces.

W. J. O.

Nogue (M.) & Lhuerre (H.). **Un cas de mycétome à grains rouges.**—*Bull. Soc. Path. Exot.* 1922. Nov. 8. Vol. 15. No. 9. p. 862. With 1 text fig.

Report of a case of 10 years' duration involving the hypogastrium, left internal iliac fossa and middle third of the left thigh. The internal and external administration of iodine produced some slight improvement.

W. J. O.

Shear (C. L.). [**Life-History of an Undescribed Ascomycete isolated from a Granular Mycetoma of Man.**]—*Mycologia.* 1922. Vol. 14. No. 5. pp. 239–243. With 3 figs. [Summarized in *Rev. Applied Mycology.* 1923. May. Vol. 2. Pt. 5. pp. 226–227.]

A pleomorphic fungus isolated from a human ankle in Texas. The lesion had lasted 12 years and resulted from a thorn injury. The characters of the fungus are described. It is named *Allescheria boydii*.

A. G. B.

Dong-Ngoc-Dieu & Millous (P. L. E.). **Traitement des trichophyties dans les pays chauds par les injections intraveineuses de liqueur iodo-iodurée.**—*Paris Méd.* 1923. July 28. Vol. 13. No. 30. pp. 88–89.

For tropical dermatomycoses, so frequent and persistent, treatment by intravenous injections of Lugol's solution is recommended. Commencing with 5 cc. then 8 cc. and 10 cc. solution, these injections were given every second day to a total of 5 to 20 injections, according to the nature of the causal parasite, the last mentioned figure being often required in cases of "tokelau."

W. J. O.

Schamberg (Jay Frank) & Kolmer (John A.). **Studies in the Chemotherapy of Fungus Infections. I. The Fungistatic and Fungicidal Activity of Various Dyes and Medicaments.**—*Arch. Dermat. & Syph.* 1922. Dec. Vol. 6. No. 6. pp. 746–754. With 3 text figs. [1 ref.]

Twenty-one chemical compounds or drugs and nine dyes were investigated to show (1) their fungistatic effect, *i.e.*, their power of restraining or inhibiting growth and (2) their fungicidal effect on cultures of *Trichophyton rosaceum, Microsporon Audouinii* and *Achorion schoenleinii*. Twenty-four dilutions of each compound were tested against each of the three moulds planted on Sabouraud's maltose medium. Of the drugs iodine showed the strongest inhibitory and sodium oxymercury orthonitrophenolate (mercurophen) the strongest fungicidal powers, while of the dyes brilliant green was the strongest restrainer and crystal violet the most powerful fungicide. The bactericidal properties of some of these compounds and dyes are tabulated for comparison with their actions on fungi. The authors remark on the comparatively weak inhibitory and killing effects on cultures of several drugs more commonly employed in the local treatment of these fungal infections.

W. J. O.

Pardo-Castello (V.). **Dermatitis Venenata: A Study of the Tropical Plants producing Dermatitis.**—*Arch. Dermat. & Syph.* 1923. Jan. Vol. 7. No. 1. pp. 81–90. With 2 text figs. [1 ref.]

This article contains a list of 40 plants of the Antilles which produce skin reactions either by the chemical action of the latex or by the mechanical irritation of the hairs and prickles, in some cases combined with the irritating action of the oil contained in the hair cells. Four main botanical groups are mentioned, with a more detailed account of the skin lesions produced by their different species and of the physical and chemical properties of these same. Attention is drawn to the increased severity of the skin lesions when occurring on moist skins.

W. J. O.

Adams (Walter Booth). **Ulcus Epidemicum. A Preliminary Report.**—*Arch. Dermat. & Syph.* 1923. May. Vol. 7. No. 5. pp. 605–610. With 2 text figs. [7 refs.]

During the period 1916–22, with a maximum incidence in 1919, a series of cases of ulcers on the exposed parts occurred in epidemic form among the indigenous poor of Syria and Palestine, associated

in many instances with starvation oedema. Appearing usually in the late spring after the rains had ceased the lesion would commence as a small itching papule which very soon became extremely painful as it assumed a dusky red and later a black colour, to break down in a few days to form an ulcer with a sloughing surface and elevated edge. Spreading rapidly, with a foul discharge of sanguineous rather than purulent material, the very sensitive ulcer, usually round but occasionally oval, might reach a diameter of 3–10 cm. in a week or less. The lesion was not a deep one and rarely penetrated to the bone. Usually of single occurrence the most frequent sites of the ulcers were the legs, ankles and feet, also hands and forearms, and only rarely above the knees and elbows. No cases were recorded with the trunk or face affected. Scraping from the edges revealed "a fusiform bacillus that resembled the diphtheria bacillus in shape, but which stained quite differently; with it there was always a symbiotic spirillum." The mode of infection was not determined, nor the host or carrier. No specific treatment is recommended.

W. J. O.

TOURNIER (E.). **Le traitement de l'Ulcère phagédénique des pays chauds par les injections sous cutanées de novarsénobenzol.**— *Bull. Soc. Path. Exot.* 1922. Dec. 13. Vol. 15. No. 10. pp. 926–930. [1 ref.]

The subcutaneous single injection of 0·30 cgm. novarsenobenzol in 4 per cent. sodium chloride solution is recommended as the therapeutical method of choice for such conditions based on the observations of 36 cases so treated. The subjective and objective improvement in 3–7 days following the injection is compared with that obtained by other methods. Locally an application of iodoform powder is employed.

W. J. O.

ABRAHAM (R. B.). **A New Treatment for Naga Sore.**— *Indian Med. Gaz.* 1923. Oct. Vol. 58. No. 10. pp. 479–480.

For this chronic ulceration—most commonly of the lower limbs and of undetermined etiology [see this *Bulletin*, Vol. 19, p. 168]—occurring sometimes in epidemic form in tea gardens intravenous injections of antimony tartrate are recommended. As a local application the writer has obtained satisfactory results with a solution [strength not stated] of calx chlorinata.

W. J. O.

VAN NITSEN (R.). **Un cas d'ulcération phagédénique de la face.**— *Ann. Soc. Belge de Méd. Trop.* Brussels. 1922. Dec. Vol. 2. No. 2–3. pp. 133–134. With 1 plate.

Report of a rapidly fatal case of phagedenic ulceration of the face, which commencing about the carious incisors spread in the course of 12 days to destroy the whole upper lip and to attack the cheeks and nose, the cartilage and bones of the nose and superior maxilla. Two injections of neosalvarsan exercised no effect. Fusiform bacilli and spirilla were found in the pus. The differential diagnosis of espundia and gangosa is discussed, and the possible relation of this case to one of noma.

W. J. O.

i. Randall (Alexander), Small (James C.) & Belk (Wm. P.). **Tropical Inguinal Granuloma in the Eastern United States.**—*Jl. Urology* 1921. Vol. 5. No. 6. pp. 539–548.

ii. ——, —— & ——. **Granuloma Inguinale.**—*Surgery, Gynecol. & Obstetrics.* 1922. June. Vol. 34. No. 6. pp. 717–739. With 22 figs.

i. Eleven cases (8 male, 3 female) have been under the observation of the authors, while four other cases had been reported to them. The disease is no new one to Philadelphia. The histological pictures of four cases examined showed proliferation of the fibrous tissue with considerable numbers of polynuclear leucocytes and endothelial cells, and proliferation of the squamous epithelium which was in one case such as to suggest an epithelioma. The staining and cultural characteristics of the granuloma organisms and their pathogenicity are described. Clinically the lesion was a granuloma. While some destructive action was obviously present there was no eroding, undermining necrotic base characteristic of an ulcer. With one exception, which was probably a case of double infection and did not respond so readily to treatment, all the cases occurred in negroes. Treatment with intravenous injections of tartar emetic gave uniformly good results. The main features of the cases observed and their course are presented in tabulated form.

ii. This is an elaboration of the previous paper, the number of cases being raised to 16, which are reported in some detail. The disease has been endemic in Philadelphia for the past 50 years and has been recognized, though improperly diagnosed for 25 years. The lesions have been confused with condylomata, tertiary syphilis, chancroidal sores and tuberculosis cutis. In this series the diagnosis was based in all cases on the presence of Donovan's encapsulated bacillus in and about the mononuclear cells in smears made from the lesions. The sparsity of other bacteria generally in these smears was remarkable. Animal inoculations with the encapsulated organisms from the granuloma lesions, compared with similar experiments carried out with Friedlaender's Bacillus from the throat, etc., showed no distinctive features. In only one of the cases reported were cultures from the granuloma lesions positive for Friedlaender's Bacillus. The most frequent site of the disease is the groin with quite frequent extension to the perineum and buttocks. The most destructive lesions occurred in males about the prepuce to cause erosion of the glans and shaft of the penis, while in females the labia majora suffered most and might become elephantine. The condition could extend into the vagina and rectum. The subjective symptoms as a rule were few, but most cases showed some secondary anaemia. Intolerance to tartar emetic administration was indicated by rheumatoid pains and stiffness of the joints especially on morning rising. Some good photographs illustrate the cases reported.

W. J. O.

Gruhzit (O. M.). **Granuloma Inguinale.**—*Amer. Jl. Trop. Med.* 1923. July. Vol. 3. No. 4, pp. 289–295. With 1 fig. [3 refs.]

Two cases are reported from Columbus, Georgia. The first patient, a white female, had had an ulceration about the pudenda and perineum, with intermittent healing and relapsing, after an injury to the right groin four years previously. Smears from the ulcer showed no

Donovan bodies but many diphtheroid organisms. Healing took place under treatment by intravenous injections of tartar emetic following the administration of anti-diphtheritic serum. The second case was a male negro with an ulceration of seven months' duration at the base of the penis, from which smears revealed the presence of Donovan's bodies and " the fusiform bacillus and spirochetae of Vincent's angina." The specific granuloma organisms disappeared from the lesion with marked general improvement following intravenous tartar emetic medication, while the ulcer healed only after an injection of salvarsan.

Commenting on these two cases emphasis is laid upon the necessity of treating specifically any secondary infection occurring in this disease.

W. J. O.

GAGE (I. M.). **Granuloma Inguinale.**—*Arch. Dermat. & Syph.* 1923. Mar. Vol. 7. No. 3. pp. 303–325. With 11 text figs. [15 refs.]

This comprehensive account of the disease includes a detailed description of the histological picture of this " sclerosing granuloma." The vexed question of the nature of the causal organism is left undecided while the author favours the parasite described by DONOVAN, enclosed in the endothelial cells which are well figured in one plate. With regard to the differential diagnosis stress is laid upon the non-enlargement of the lymphatic glands. A Wassermann reaction should be performed in each case on account of the frequently accompanying syphilis. Treatment by intravenous injections of tartar emetic is recommended for all cases, while the urine must be carefully watched during the course of treatment especially in old subjects. Surgical removal, as an additional measure, is advised only for those cases where the lesions are readily accessible to such procedure. The importance of keeping all cases under observation for at least 12 months after healing is emphasized, as recurrences are not uncommon. Four cases are briefly reported.

W. J. O.

CNOPIUS (N.). **Some Communications concerning Venereal Granuloma in New Guinea.**—*Trans. 4th Congress of the Far Eastern Assoc. of Trop. Med.* 1921. Vol. 2. pp. 180–186. With 2 plates.

A brief account of granuloma inguinale occurring among the aborigines of New Guinea called " kaja-kajas." The number of cases treated is not stated. In all there had been obtained satisfactory healing with intravenous injections of antimony. Many cases had been of several years' duration, having been confused with syphilis and soft sore. The mode of introduction of the disease was not determined, but its sporadic enormous spread was due to the sexual abuses rampant among these natives.

W. J. O.

MANSON-BAHR (Philip). **Case of Ulcerating Granuloma of the Pudenda in which Healing commenced immediately subsequent to the Administration of Antimony.**—*Proc. Roy. Soc. Med.* (Clinical Sect.). 1923. Mar. Vol. 16. No. 5. pp. 25–26.

Report of a case which had been treated unsuccessfully during 13 months with anti-syphilitic remedies and with X-rays. The subsequent

administration of 10½ gr. antimony tartrate injected intravenously combined with 7 intramuscular injections of oscol stibium had produced almost complete healing.

W. J. O.

Small (James C.) & Julianelle (Louis A.). **Biologic and Serologic Studies of *Bacillus mucosus* Group. Comparison of Strains from Granuloma Inguinale with Strains from Respiratory Tract.**—*Jl. Infect. Dis.* 1923. June. Vol. 32. No. 6. pp. 456–470. [12 refs.]

In the course of cultural studies of the lesions of inguinal granuloma encapsulated gram-negative bacilli were encountered. Cultures of strains of these indicated that they belonged to the Mucosus group found frequently in lesions of the respiratory tract. It was therefore thought desirable to compare strains of respiratory with those of granuloma origin. The morphology, biochemical reactions, inhibition of growth by tartar emetic and the serological reactions were studied. It was concluded that the respective strains could not thus be differentiated. The carbohydrate fermentation reactions were irregular and unreliable.

A. G. B.

Mendelson (Ralph W.). **Xanthoma Tropicum (Juxta-Articular Nodules).**—*Jl. Trop. Med. & Hyg.* 1923. June 1. Vol 26. No 11. pp. 181–182. With 1 plate. [18 refs.]

A brief review of the history of the disease is followed by a short commentary on its aetiology. Having in no case been able to obtain positive cultural results, or positive inoculations in animals, the writer does not believe in the bacterial nature of the condition. Serum reactions did not suggest syphilis, nor had he been able to find the organism of yaws in sections or nodule juice. In his experience the nodules had not been observed above the elbows, while the commonest sites were the interior and lateral aspects of the lower parts of the legs. Secondary infection over irritated nodules could produce an ulcerated appearance. Microscopically the tumours appeared as fibromata with an abundant blood supply and a small round-celled perivascular infiltration. In older cases degeneration at first of a fatty nature, later with calcification and amyloid changes, had been observed. No tendency towards malignancy had been noted. The cause is assumed (by the author) to be some metabolic process at present undetermined. This short article is accompanied by useful illustrations.

W. J. O.

Cange (A.) & Argaud (R.). **Les facteurs étiologiques des " nodosités juxta-articulaires."**—*Gaz. des Hôpit.* 1923. May 29 & 31. Vol. 96. No. 43. pp. 685–688. [8 refs.]

This brief, comprehensive and interesting review, containing numerous references, draws particular attention to a recent paper by v. Dijke and Oudendal [this *Bulletin* Vol. 20, p. 288]. In criticizing the conclusions drawn by these writers, who have inclined to attribute the causal origin of the nodules to framboesia, Cange and Argaud consider that this work rather supports the view, which they themselves have maintained, of a syphilitic factor in the etiology of the lesions in question.

W. J. O.

PICOUT-LAFOREST (A.). **Un cas de nodosités juxta-articulaires d'origine syphilitique chez un indigène du Sahara.**— *Arch. Instituts Pasteur de l'Afrique du Nord.* 1923. May. Vol. 3. No. 2. pp. 143–145. [8 refs.]

Case report of an Arab, aged 35, with syphilitic lesions inside the mouth and with discrete nodules about both elbows and knees. The nodules, non-adherent to the skin while apparently in some attachment to the deep aponeurosis, were of one year's duration. The association of these tumours with the syphilitic lesions on the buccal mucosa and the simultaneous disappearance of both types of lesions under combined mercury novarsenobenzol administration were facts in favour of their having one common specific causal origin.

W. J. O.

ARGAUD (R.) & NÉNON (J.). **Étude histologique d'un nouveau cas de nodosité juxta-articulaire.**— *Arch. Instituts Pasteur de l'Afrique du Nord.* 1922. Dec. Vol. 2. No. 4. pp. 465–468. With 3 figs. [2 refs.]

The patient was a male native of Laghouat, Algeria, aged 70 years, with a positive Wassermann reaction and with signs of old scarring about the forehead and right cheek. The lesion was a tumour of 20 years' duration at the level of the left elbow and had never caused any trouble. Some years previously there had been a similar lesion on the right elbow ; this had broken down and become resolved, leaving only a small non-adherent scar. Under local anaesthesia the tumour was enucleated and found to be adherent to the periosteum below by dense fibrous tissue, while it was free above and at the sides.

Macroscopically, the lower half of the tumour consisted of dense fibrous tissue which became less resistant towards the surface : the upper part showed an irregular cavity, with smooth thick walls, divided into smaller spaces and containing a yellowish viscid purulent fluid resembling that in a gumma. Microscopically the perivascular plasma cells and giant cells few in number presented a condition suggesting necrobiosis. The fibrous portion of the tumour with picric fuchsin gave the picture of a collagen nodule undergoing chondrogenous metaplasia. The capillaries in the more fibrous parts of the tumour were obliterated, and in those areas with persisting signs of inflammation showed endothelial proliferation. The syphilitic nature of these tumours is emphasized in the summary of the histological picture of sclerosis with softening found in this case.

W. J. O.

REMLINGER (P.). **Un cas de nodosités juxta-articulaires observé au Maroc chez un Européen.**— *Bull. Soc. Path. Exot.* 1923. May 9. Vol. 16. No. 5. pp. 346–347. [3 refs.]

Clinical report of a Spaniard, aged 26, who had been 4 years resident in Morocco. There was no history or sign of syphilis ; he had had several attacks of gonorrhoea. The tumours had developed insidiously about both elbow regions while he had complained during four months of pain in the shoulders and elbows on movement of these joints. The lesion about the right epitrochlea region—of the size of a date—appeared of a fibromatous consistency and in some connexion with the periosteum : the tumour about the left olecranon region was larger and harder than that on the right elbow and was subcutaneous. Both excision and anti-syphilitic medication were refused.

W. J. O.

Clapier (P.). **Nodosités juxta-articulaires et Tréponèmes.**—*Bull. Soc. Path. Exot.* 1923. July 11. Vol. 16. No. 7. pp. 553–556. [5 refs.]

From the laboratory of Libreville, Gabun, is reported a case of a tumour of four year's duration situated below the right patella of a man of 27 years who had been affected since the age of 3 years with framboesia. The lesion, of the size of a small nut and movable on the underlying tissues, had ulcerated seven months previous to the patient's coming under observation, and had not healed. Situated in a similar position on the left leg, but about 1 cm. lower down, was a smaller hard subcutaneous tumour, movable on its under surface and not adherent above to the skin. Stained smears of the pus from the right sided lesion revealed numerous variously sized treponemata which were considered to resemble *T. pertenue*. Following six injections of novarsenol both tumours entirely disappeared, and there had been no recurrence when this patient was again seen five months later.

W. J. O.

Montenegro (João). **Etio-pathogenia das nodosidades juxta-articulares.** [The Pathogeny of Juxta-Articular Nodules.]—*Bol. Soc. Med. Cirurg. de S. Paulo.* Brazil. 1922. Dec.; & 1923. Jan. & Feb. Vol. 5. 3rd Series. Nos. 10, 11, & 12. pp. 199–201.

——. **Etio-pathologia das nodosidades juxta-articulares.**—*Brazil Medico.* 1923. Apr. 28. Year 37. Vol. 1. No. 17. pp. 233–235. With 2 text figs.

A woman 29 years of age,, had suffered from an ulcer of the vulva which was regarded and treated as syphilitic. Five years later she developed juxta-articular nodules of the elbows, and two years subsequently of the knees. The Wassermann reaction was now strongly positive (it had not been tested at first); treatment with oxide of bismuth was instituted and acted specifically on the nodules. One of them was excised and showed microscopically a marked fibrosis with new formation of vessels and perivascular lymphocytic infiltration. No parasites were found and pieces stained by Levaditi's method did not show any spironemata. The author is of opinion that, if not the sole cause, syphilis is the most common etiological factor of juxta-articular nodules in Brazil.

H. Harold Scott.

Ross (I. Clunies). *Notoedres cati*: **its Possible Transmission to Man.**—*Med. Jl. Australia.* 1923. Sept. 8. 10th Year. Vol. 2. No. 10. pp. 246–249. [9 refs.]

The parasite causing mange in the cat, *Notoedres cati*, differs from the Sarcoptes parasite of scabies in man and in other domestic animals in having the anus on the dorsal surface instead of terminal as in Sarcoptes. Typical burrows are not formed, the female laying her ova quite superficially in so-called "nests." The sites of predilection are the ears, forehead and neck, with less frequently occurring lesions on the paws and tail. The earliest lesions are small papules which soon show yellowish-grey crusting and the hairs fall out. Microscopical examination of the crusts in 10 per cent. potash reveals parasites and ova in varying stages of development. The transmissibility of the parasite to man and other animals is very briefly discussed. Following experiments on himself the author concludes "that though *Notoedres* is communicable to man, the infection is temporary and tends to disappear spontaneously."

W. J. O.

JOYEUX (Ch.). **Sur un cas de gale norvégienne en Afrique Occidentale.** —*Ann. Parasit. Humaine et Comparée.* Paris. 1923. June. Vol. 1. No. 2. pp. 167–169. [6 refs.]

Report of a case of Norwegian scabies in a native, observed in Kouroussa (French Upper Guinea). The thick crusted lesions were generalized over the whole body, especially marked on the limbs while sparing the scalp and nails and only slightly involving the face. The patient showed no signs of leprosy. Examination of the crusts in potash revealed numerous mites in varying stages of development and no fungoid elements. Following a brief commentary on the nature of the itch-mite causing the disease in question, the conclusion is drawn that this is the same parasite as concerns the ordinary scabies affection.

W. J. O.

MONTPELLIER (J.) & BÉRAUD (M.). **La filario-réaction chez les sujets atteints de "gale filarienne" (Onchocercose dermique).**—*Bull. Soc. française de Dermat. et de Syph.* 1921. June 9. Vol. 28. No. 7. pp. 344–346.

In this investigation only water-extracted antigens had given constant results and with non-heated sera. The reaction appeared to be a specific one ; 90 per cent. sera gave a positive result, as also 50 per cent. sera of Senegalese not clinically affected. A certain proportion of these latter cases might, however, have been infected. In comparing these results with those of other workers the question is asked—Is the reaction one specific to infection by the *O. volvulus*, or does it concern an antibody occurring commonly in any nematode infection ?

W. J. O.

SUTTON (Lyle A.) & MALLIA (William M.). **Malignant Melanoma in the Negro.**—*Arch. Dermat. & Syph.* 1923. Sept. Vol. 8. No. 3. pp. 325–343. With 7 text figs. [11 refs.]

The extreme rarity of pigmented tumours in the negro race is noted and the most likely origin of such tumours from a pigmented naevus often following trauma.

A detailed report is made of a negress aged 78, in whom the unusual pigmented skin condition had gradually spread upwards from the foot to involve in the course of six months almost the complete left lower limb.

W. J. O.

DE MAGALHÃES (P. S.). **A chamada botryomycose humana, granuloma telangiectasico-botryomycosis hominis, granuloma pyogenicum.** [So-called Botryomycosis.]—10 pp. With 2 text figs. 1923. Sept. Typ. Revista dos Tribunães–Carmo, 55.

The condition is easily recognizable : a rounded tumour varying in size between that of a pea and that of a filbert, red in colour, with a finely granular surface, sometimes raspberry-like, readily bleeding, occasionally superficially ulcerated, usually pedunculated, having the characters of a benign tumour, and affecting particularly the fingers, or hands, and the free edges of the lips. Its pathology, however, is a matter of dispute and the author suggests that it is a telangiectatic neoplasm or granuloma analogous to the ordinary naevus.

H. Harold Scott.

JOJOT & LAIGRET. **Un cas de tumeurs superficielles multiples observé au Cameroun.**—*Bull. Soc. Path. Exot.* 1922. Dec. 13. Vol. 15. No. 10. pp. 956–958. With 1 text fig.

Report of an interesting case of multiple painless superficial tumours, in a native aged 30, varying in size from a nut to a lentil which were adherent neither to the underlying tissue, nor to the skin. About some of the tumours the skin showed hyperpigmentation and in some few instances an increase of the horny layer. On pressure there was some tenderness. In all 493 tumours were counted of which six were situated on the head. There was, in addition, an elephantiasic swelling of the hands and feet, the fingers and toes resembling radishes; tumefaction and ulceration on the left sole had occurred as a complication due to secondary infection. Histological examination proved the tumours to be of a typical malignant sarcomatous nature. Attention is drawn to the unexpected nature of the tumours which had been thought to be probably mycotic. (No mention is made of the primary lesion).

W. J. O.

NOEL (P.). **Tumeurs pseudo-éléphantiasiques congénitales de la nuque.** —*Ann. Dermat. et Syph.* 1922. July. 6th Ser. Vol. 3. No. 7. pp. 366–367. With 1 fig.

Case report concerning a negro of the Cameroons with a symmetrical distribution in almost a horizontal line at the base of the neck of three painless subcutaneous tumours dating from infancy. The largest outermost lesion on each side was situated above and to the inner side of the coraco-clavicular joint, and the smallest innermost lesion placed some 3 cm. from the mid-dorsal line. These tumours, non-lobulated and of elastic consistency, were freely movable on the underlying tissues while being definitely connected with the skin which was thickened over the lesions. No histological examination was made, but the tumours were presumed to be naevoid in type and of a fibromatous nature.

W. J. O.

NOËL. **Tache bleue congénitale, dite "Mongolique," chez les nègres africains.**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1922. May–June–July–Aug. Vol. 20. No. 2. pp. 158–161.

This interesting note is put forward by the writer to induce other observers to investigate the frequency of this condition among African natives. He had examined 70 new-born infants and had found this dermal pigmentation in 47, or over 67 per cent. The difficulty of observing this peculiarity in the coloured races is emphasized, with the need of making the examination before the appearance of the natural epidermal pigmentation.

W. J. O.

ARCHIBALD (R. G.). **Erythrodermia Congenitale Ichthyosiforme in an Arab Child.**—*Jl. Trop. Med. & Hyg.* 1923. June 1. Vol. 26. No. 11. pp. 180–181. With 1 plate. [3 refs.]

Case report of an Arab girl, aged three, whose unusual skin condition had been observed since birth. The skin abnormality consisted of a generalized scaliness varying from a furfuraceous desquamation to thick plate-like scales accompanied by erythroderma, the only unaffected parts being the palms, anterior aspect of the neck and inner side of both thighs, while the flexures of the elbow and knee joints were only slightly involved.

The soles showed hyperkeratosis, the palms hyperidrosis and erythroderma without scaling. Generalized anidrosis otherwise. The eruption on the extensor and lateral aspects of the forearms was lichenoid in appearance. The toe nails were brittle and fissured, the finger nails unaffected. "The scalp was very seborrhoeic, but the growth of the hair was not affected." The blood showed eosinophilia 17 per cent., without any evidence of worm infection being found in the faeces.

W. J. O.

HUDELLET. **Lesions osseuses dans l'ainhum (étude radiologique).**— *Congrès de la Santé Publique et de la Prévoyance Sociale, Marseille, 11–17 Septembre, 1922, Comptes Rendus.* pp. 157–163. With 4 text figs.

An interesting description with photographs of the radiological appearances of the toes affected in ainhum, in which condition the picture varies, according to the stage of the evolution of the disease, from that of a condensing osteitis to one showing resorption at the level of the furrow, on the distal side of which the calcium salts are slowly lost. This appearance is contrasted with that of a rarefying osteitis previously associated by SALANOÜE-IPIN with ainhum, and with the appearances observed in cases of nerve leprosy.

W. J. O.

i. ARCHIBALD (R. G.). **Lichen Planus Hypertrophicus in the Sudan.**— *Jl. Trop. Med. & Hyg.* 1923. June 1. Vol. 26. No. 11. p. 179. With 1 plate.

ii. PUSEY (William Allen). **Lacquer Dermatitis.**— *Arch. Dermat. & Syph.* 1923. Jan. Vol. 7. No. 1. pp. 91–92. [3 refs.]

iii. CORSON (J. F.). **A Case of Creeping Eruption in a European in the Gold Coast.**— *Ann. Trop. Med. & Parasit.* 1923. Apr. 18. Vol. 17. No. 1. pp. 1–3. With 1 plate. [44 refs.]

iv. SHATTUCK (George Cheever). **Granuloma Inguinale in Boston.**— *Boston Med. & Surg. Jl.* 1923. Apr. 12. Vol. 188. No. 15. pp. 530–532.

v. WEIDMAN (Fred D.). **Certain Dermatoses of Monkeys and an Ape. Pemphigus, Scabies, Sebaceous Cyst, Local Subcutaneous Edema, Benign Superficial Blastomycotic Dermatosis and Tinea Capitis and Circinata.**— *Arch. Dermat. & Syph.* 1923. Mar. Vol. 7. No. 3. pp. 289–302. With 7 text figs. [12 refs.]

vi. DE KORTE (W. E.). **A Paramycetoma (?) of the Forearm.**— *Jl. Path. & Bact.* 1923. Apr. Vol. 26. No. 2. pp. 189–192. With 1 plate. [2 refs.]

vii. CRAIK (R.). **Acladium Castellanii (Pinoy).**— *Jl. Trop. Med. & Hyg.* 1923. June 1. Vol. 26. No. 11. pp. 184–185. With 1 text fig.

i. Report of a typical case with papular, linear and sclerose hypertrophic lesions. So far as the writer was aware no previous case had been noted in the Sudan.

ii. Case report of a dermatitis (papulovesicular) of the hands and forearms in a man handling small canes, from which an alcoholic extract of the varnish produced an inflammatory skin reaction when applied to this patient.

iii. Report of a case in which the causal parasite was not determined. A list of useful references accompanies this otherwise negative report.

iv. Three cases are reported in two of which the diagnosis is admitted to be uncertain, particularly that of a boy aged two years. In these two cases the lesions were apparently cured by surgical treatment alone. A list of cases previously reported from the United States is appended.

v. The title summarizes the contents of this paper, of interest only as a short contribution to the study of comparative pathology.

vi. The term paramycetoma is defined and the histological appearance of a tumour, removed from the forearm of a woman at the old site of an injury, is described in some detail to support the diagnosis so established.

vii. The cultural characteristics are described, and the alternative name of *Pseudomicrosporon castellanii* for this fungus is suggested.

W. J. O.

Neto (Vilas-Bôas). **Tinha da barba.** *Trichophyton crateriforme* **Sab. 1893.** [Sycosis due to *Trichophyton crateriforme*.] Reprinted from *Medicina Moderna.* Porto. No. 353. 16 pp. With 6 figs.

A case is recorded of a man, aged 26 years, suffering from sycosis from which the author cultivated on Sabouraud's medium the *Trichophyton crateriforme.* The condition had been present for more than a year.

H. Harold Scott.

Abelardo Lara (N.). **Las moscas y su papel en patologia.**—*Rev. Med. de Yucatan.* 1921. Dec. Vol. 12. No. 4. pp. 71–81. With 7 text figs.

Archives des Instituts Pasteur de l'Afrique du Nord. 1923. Vol. 3. No. 1. p. 98.—**Deux nouveaux cas de** *Xéroderma pigmentosum* **observés en Tunisie.**

Carrión (A. L.). **Observations on Dermatomycosis in Porto Rico.**—*Arch. Dermat. & Syph.* 1923. June. Vol. 7. No. 6. pp. 773–777. With 3 text figs.

Hoffmann (W. H.). **El Granuloma Venero en las Americas.**—Reprinted from *Sanidad y Benefic. Bol. Ofic.* 1921. Nov. Vol. 26. No. 5. p. 299.

Jiménez (J. B.) & Cuenca (H.). **Nota acerca de un caso de actinomicosis observado en Maracaibo.**—*Rev. Med. y Cirug.* Caracas. 1923. July 31. Year 6. Month 9. No. 64. pp. 183–186. (Discussion pp. 186–187.)

Mandal (Upendra Nath). **Streptococcal Affections of the Skin.**—*Indian Med. Gaz.* 1923. Aug. Vol. 58. No. 8. pp. 375–376.

Marulanda (Abel Echeverri). **Ulceras de las tierras calientas.**—*Repert. de Med. y Cirug.* 1921. Aug. Vol. 12. No. 11. (No. 143.) pp. 584–593.

Rodinò (Nicola). **I fagedenismi tropicala nella Somalia italiana.**—*Giorn. di Med. Milit.* 1922. Feb. 1. Vol. 70. No. 2. pp. 94–97. With 1 text fig.

Severiano de Magalhães (Pedro). **A chamada botryomycose humana, granuloma telangiectasico—botryomycosis hominis, granuloma pyogenicum.**—*Brazil Medico.* 1923. Aug. 25. Year 37. Vol. 2. No. 8. pp. 117–118.

Vaz (Luiz). **Algumas observações sobre o emprego do "aspir" no tratamento da syphilis e granuloma venereo.**—*Brazil Medico.* 1923. May 19. Year 37. Vol. 1. No. 20. pp. 279–280.

AMOEBIASIS AND DYSENTERY.

Amoebiasis.

Jausion & Dekester. **L'amibiase à Fez.**—*Congrès de la Santé Publique et de la Prévoyance Sociale, Marseille, 11–17 Septembre, 1922. Comptes Rendus.* pp. 174–188. With 1 chart. [2 refs.]

It is said that Fez is a hot-bed of amoebic dysentery, 22·9 per cent. of the inhabitants being infected with *E. histolytica*. Unfortunately the paper is marked by some confusion in the nomenclature of the parasite. Under the term "Entamoeba dysenteriae" the authors distinguish a "tetragena" and a "minuta," as well as intermediary forms between *E. dysenteriae* and *E. coli*. They regard the occurrence of Charcot-Leyden crystals as infrequent in the stools of amoebic dysentery, and attribute their presence to gastric and pancreatic insufficiency. The general unhygienic condition of the native quarters of Fez is favourable to the spread of amoebic dysentery and is graphically described. In their search for healthy carriers they find that in the Mallah quarter the index is 7·69 and in Fez Medina as high as 22·9. Amongst the Arabs of Tafilalet and Sous the index is said to be as high as 45 per cent. The figures for hospital admissions show that 7·9 per cent. of European recruits, 4·8 per cent. of Arabs, and 9·7 per cent. of Senegalese are admitted for symptoms of the disease.

Amoebic dysentery is most common during the six months May to November. The authors have examined 79 animals of different kinds, including rabbits, guinea-pigs, cats, dogs, cows, asses, mules, horses, hens, and toads, for the presence of *E. histolytica*, with a negative result. Their experiments with flies have already been reported.

The rest of the paper contains clinical observations of little importance.

P. H. Manson-Bahr.

Normet & Salle. **Les dysenteries amibiennes à Fez.**—*Congrès de la Santé Publique et de la Prévoyance Sociale, Marseille, 11-17 Septembre, 1922. Comptes Rendus.* pp. 188–193.

Intestinal infections of all kinds, attributed to pollution of the water supply, are very common in Fez. Bacillary dysentery is not rare during the hot season. It begins by isolated cases without ascertainable epidemic foci, and does not appear to differ from this form of dysentery as seen elsewhere. During the month of September, at the end of summer, a series of infections are met with which may be termed coli bacillosis, in which the dysenteric syndrome is combined with an enteric-like fever with frequent attacks of hepatitis and, it may be, icterus. The colon bacilli are found in large numbers in the stools. The authors recognize spirillar dysenteries which are said to be due to the fusiform spirilla and bacilli of Vincent, but they advance no evidence for this belief, except that they consider that this condition is curable by the ingestion of novarsenobenzol in capsules.

The chief form of dysentery in Fez is amoebic, and is said to be due to the organism in three forms—the large variety which ingests red

blood corpuscles, the small which feeds on bacteria, and the cysts to which they allocate eight nuclei ; they state that they have never seen a quadrinucleate cyst in Fez. They consider that the flagellates *Trichomonas intestinalis* and *Tetramitus mesnili* are not themselves capable of setting up dysentery, but may cause chronic irritation of the mucous membrane ; on the other hand they consider that *Lamblia intestinalis* is pathogenic.

P. H. M-B.

Jausion (H.) & Dekester (M.). **Sur la transmission comparée des kystes d'***Entamoeba dysenteriae* **et de** *Giardia intestinalis* **par les mouches.**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1923. May. Vol. 3. No. 2. pp. 154–155. [1 ref.]

Thirty-eight *Musca domestica*, one Stomoxys, two *Calliphora vomitoria*, fed for eight hours, at a temperature of 30° C., on stools containing *Entamoeba histolytica* and its cysts were killed in 5 per cent. formol : all that was obtained from them were a few amoebae in a very bad state of preservation.

Fifty *M. domestica* caught in the laboratory and ground up in serum did not yield any amoebae or cysts.

Twenty-three *M. domestica* and one *Sarcophaga magnifica* caught, some in the laboratory and some in the latrines, were equally barren of amoebae and cysts.

Fresh fly excrement did not contain parasites of any kind.

Forty-eight *M. domestica* and two *S. magnifica* caught in the latrines and killed in 0·9 per cent. serum kept at 37° C., injected into the rectum of a kitten, did not produce in the animal any effect visible in life or at necropsy.

From these experiments which were made at Fez (lat. 34° 8′ N.) in the fly season, the authors conclude that the part played by flies in the spread of amoebiasis must be very small.

A. Alcock.

Maggiore (Salvatore). **Nota sulla dissenteria amebica nell'infanzia.** [Amoebic Dysentery in Children].—*Pediatria.* 1923. Sept. 1. Vol. 31. No. 17. pp. 913–921. [8 refs.]

Amoebic dysentery has been regarded as a rarity in Palermo, nearly all cases of dysentery there having been recorded as bacillary. The author gives details of seven patients, whose ages varied between six months and four years, all of whom suffered from acute amoebic dysentery. One child contracted the disease at the age of five months. All were treated with injections of emetine hydrochloride, the initial dose being ¼ cgm., the subsequent doses 1 cgm. The results were not very satisfactory. One was cured, one greatly improved and left for the country, one, who was also tuberculous, improved to a certain extent only, one died, one still remained in hospital but was becoming worse, two were taken away by their parents and could not be followed up. The author concludes that the disease is by no means rare in Palermo now, and that the younger the child the worse the prognosis, since emetine appears to be less effectual with infants than with older children and adults.

H. Harold Scott.

RAZETTI (L.). **Los abcesos hepáticos.**—*Gac. Méd. de Caracas.* 1923. Mar. 15. Vol. 30. No. 5. p. 65.

The writer records that at the Vargas Hospital he has had to deal with only 21 cases of liver abscess during the nine years 1914–1922—one tenth of the number for a similar term prior to the introduction of emetine for the treatment of amoebic dysentery. To this the reduction in the number of cases is attributed. Of the 21, 13 were treated by ROGERS's method ; 11 recovered, 2 died. The remaining 8 were successfully operated upon. [The figures given in the table are not quite correct].

During the first two months of 1923 there were three more cases. In one the abscess burst into the lung and the patient died.

H. Harold Scott.

PICCOLI (Giovanni). **Un caso di ascesso epatico dissenterico a evoluzione toracica.**—*Ann. di Med. Nav. e Colon.* 1923. July–Aug. Year 29. Vol. 2. No. 1–2. pp. 1–11. [2 refs.]

A detailed account is given of an ex-soldier, 37 years of age, who suffered from an attack of dysentery (treated by injections of emetine) in Macedonia in 1917. Later in the same year the symptoms recurred to be succeeded almost at once by pain in the right hypochondrium. Emetine was again administered ; the bowel symptoms cleared up but the liver trouble persisted. In spite of continued treatment with the drug an abscess developed and burst into the lung. Liver pus was expectorated for many months but the condition terminated in recovery without operative interference. The writer is of opinion that though the emetine did not prevent the development of the abscess the favourable issue may be ascribed to the use of the drug.

H. Harold Scott.

HARTMANN-KEPPEL (G. L.). **Vingt-deux observations d'abcès amibiens du foie, traités par l'émétine.**—*Rev. de Chir.* 1923. Vol. 42. No. 2. pp. 89–116.

In the 22 cases of amoebic hepatitis here carefully described, mostly from the Near East, the ages varied from 14–68 years. Eleven had developed hepatic abscess while suffering from dysenteric symptoms. In 17 cases there was a single abscess, in 3 cases two, and in 2 cases as many as five. In 16 they occurred in the right lobe of the liver, and in 6 in the left. The abscess pointed in 10 cases towards the thorax, and in 3 opened into the lung ; in 5 cases it pointed into the abdomen, in 5 towards the costal margin, and in 1 case towards the lumbar region. The co-incidence of abscesses in other parts of the body was found in 4 cases—brain once, pancreas once, kidney once, and prostate once, all of which are said to have been of amoebic origin.

The death rate was 13 per cent. in this series. The onset was extremely variable ; it was acute in 8 cases, subacute in a smaller number, insidious in 5, while in a single instance it provoked no symptoms at all.

In 7 cases the pain was in the region of the liver, in 3 it was referred to the right shoulder, and in 4 to the epigastrium ; in 1 instance the point of maximum tenderness was over the appendix.

As regards the physical condition, in 5 it was extremely critical, in 12 it was serious, while 3 were in fair health, and 1 appeared to have no hepatic lesions at all.

For diagnosis radioscopy gave useful information in 6 cases, but in the remainder was of no service.

As regards the treatment, in 16 cases treated on medical lines with emetine and arsenic, ipecacuanha and arsenic, emetine and bismuth, the abscesses apparently disappeared. In two cases surgical treatment was combined with medical. Emetine was given up to ·32 gm. weekly; the whole treatment lasted three weeks.

The 3 cases which died succumbed to dysentery and haemorrhage.

The author is of opinion that liver abscess is becoming rare owing to the general employment of emetine in the treatment of amoebic dysentery. He thinks the drug is of no use when the liver pus is infected with other organisms, and in this respect the bacteriological examination of the liver pus is important.

P. H. M-B.

PETZETAKIS. **La broncho-amibiase. Bronchites amibiennes pures sans abcès. (Présence de l'amoeba histolytica dans les crachats.)** —*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1923. Aug. 2. 3rd Ser. Year 39. Vol. 47. No. 27. pp. 1229–1233.

The author draws attention to a peculiar bronchitis which is characterized, so he says, by the constant presence of *E. histolytica* and *its cysts* in the sputum. For some time past attention has been drawn to the extraordinarily favourable influence of emetine in cases of an abnormal type of bronchitis which is apt to follow amoebic dysentery. Two cases are quoted. In one the patient complained of haemoptysis and *E. histolytica* was found in the sputum after a prolonged search; all symptoms cleared up after intravenous injection of emetine.

The second patient was troubled with a muco-purulent sputum in which again the living amoebae and cysts were demonstrated, and this case also was cured by intravenous injection of emetine. These two cases, he considers, are examples of pure pulmonary amoebiasis without abscess formation.

The author considers that there can be no doubt about the identity of the amoebae, as the diagnosis was verified by CRENDIROPOULO. Reference is made to other cases of a similar nature recently noticed in this *Bulletin*.

P. H. M-B.

MANSON-BAHR (Philip). **Pulmonary Amoebiasis.**—*Lancet.* 1923. Sept. 22. pp. 599–601. With 3 charts. [15 refs.]

In this paper five interesting cases are recorded in detail. The first three are instances of pulmonary conditions resembling in many of their symptoms broncho-pneumonia or miliary tuberculosis, but failing to yield to the usual methods of treatment. Two of the patients were ex-soldiers who had suffered from dysentery, the third was a Lascar who gave no history of this disease nor exhibited any signs of it beyond slight thickening of the sigmoid. In view of the history of dysentery in the first two patients emetine injections and pulv. ipecac. were given with rapid and lasting benefit. Profiting by these experiences the writer employed similar treatment in the third case with equally fortunate results. In all three the temperature fell promptly to normal. There was no hepatic abscess in any of them. It is worthy of note that the second patient came into hospital for a

relapse of amoebic dysentery and was treated with emetine bismuthous iodide ; a fortnight later the pulmonary symptoms appeared and yielded to injections of emetine, so that it would seem that the former drug was not able to ward off the pulmonary attack.

The other two cases recorded were instances of rupture of hepatic abscesses into the lung, one of which became secondarily infected with monilia.

H. Harold Scott.

TRABAUD. **Un nouveau cas d'amibiase pulmonaire pure, sans abcès du foie, guérie par l'émétine.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1923. Aug. 2. 3rd Ser. Year 39. Vol. 47. No. 27. pp. 1270–1273.

The publication of the paper of RAMOND, DENOYELLE and LAUTMAN (see this *Bulletin*, Vol. 20, p. 708) has stimulated the author to record a similar case. The patient was an Algerian suffering from bronchitis with an abundance of clear expectoration. Radioscopy revealed an encysted abscess at the base of the right lung about the size of an orange, apparently not connected with the liver. Intravenous injection of salvarsan was followed by haemoptysis and the expectoration of abundant purulent sputum, but the pyrexia resolved and all symptoms disappeared after the continuous daily injection of ·08 of a gramme of emetine. The author therefore considers that the abscess was amoebic in origin and that the amoebae gained entrance to the lung via the liver, following the lymphatic vessels through the diaphragm.

P. H. M-B.

PISSAVY (A.), BRÉGER & CHABRUN. **Abcès amibien du poumon.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1923. Aug. 2. 3rd Ser. Year 39. Vol. 47. No. 27. pp. 1265–1267. (Discussion pp. 1267–1268.)

In September 1915, the patient contracted dysentery on the French front. He suffered from relapses for the next two years, and was discharged as unfit owing to the involvement of the liver. In 1921 he was found to be suffering from amoebic dysentery and was treated on the correct lines. In January 1922, he suffered from pains in the right hypochondrium with the expectoration of purulent sputum. He was then suspected of tuberculosis and relegated to an asylum, though repeated examinations for the tubercle bacillus were negative.

The diagnosis was apparently cleared up by an X-ray examination which showed a conical shadow at the right base, apparently in connexion with the right lobe of the liver, while tubercular lesions were absent. Emetine therapy resulted in rapid resolution of the pulmonary signs, and cessation of the diarrhoea and pyrexia. The patient was restored to perfect health.

[There appears to be no satisfactory evidence in this case that the abscess in the lung was not actually in communication with a similar one in the right lobe of the liver].

P. H. M-B.

HINES (Laurence E.). *Endameba histolytica* **in Seminal Fluid in a Case of Amebic Dysentery.**—*Jl. Amer. Med. Assoc.* 1923. July 28. Vol. 81. No. 4. pp. 274–275. With 1 text fig. [3 refs.]

The first and only recorded instance of the localization of *Entamoeba histolytica* in the genital organs was made by WARTHIN (see this *Bulletin*,

Vol. 19, p. 686). In the present case *E. histolytica* was found, during life, in the seminal fluid of a man suffering from chronic amoebic dysentery. There appears to have been little doubt about the genuineness of the intestinal symptoms; the faeces contained erythrocytes and active *E. histolytica*. At the same time he complained of pain in the perineum, and the seminal vesicles were found to be slightly enlarged and extremely tender. The semen collected after massage contained numerous pus cells, Gram-positive cocci, bacilli and amoebae similar to those in the faeces. Despite vigorous emetine treatment they persisted in the former situation, though absent in the latter.

"No amebas with the active motility observed in the organisms in the feces were present, but large, granular, ovoid bodies, with spherical nuclei were observed to throw out pseudopodia of clear ectoplasm while the body itself remained stationary. In one instance, the pseudopodia were seen to envelop a spermatozoon. These bodies, like the larger ones found in the stools, contained erythrocytes, vacuoles and small granules. . . . The characteristic annular nucleus was not clearly observed in smears stained with iron hematoxylin, Giemsa stain and eosin methylene-blue."

The author regards this case as one of amoebic dysentery with amoebic metastasis in the seminal vesicles. [The figure (microphotograph) given in the text is not very convincing.]

P. H. M-B.

Hines (Laurence E.). **A Form of Polypoid Colitis as a Late Stage of Amebic Dysentery. Report of Case.**—*Jl. Amer. Med. Assoc.* 1923. July 7. Vol. 81. No. 1. pp. 12–13. With 2 text figs. [11 refs.]

In amoebic dysentery it is unusual to find the colon without gross signs of ulceration as in the present case, where the mucosa was covered with extensive confluent polypoid masses. No entamoebae were found in the faeces during life. [It is doubtful whether the bodies described as representing these parasites in sections of the bowel are not examples of phagocytic endothelial or plasma cells both of which, according to the description given, appear to have been abundant.]

P. H. M-B.

Galmozzi (F.). **Sopra un caso di epatite con splenomegalia da amebiasi dissenterica.** [A Case of Hepatitis and Splenomegaly in Amoebic Dysentery].—*Riforma Med.* 1923. Aug. 27. Vol. 39. No. 35. pp. 825–827. [18 refs.]

The patient, a man, 36 years of age, suffered in 1917 from a severe attack of diarrhoea (12–14 actions daily with mucus and blood) which cleared up in a fortnight without treatment. He had a brief return of this in 1918. Three years later, in October, 1921 having remained well in the interval, he complained of lassitude and lost weight. On examination he was seen to be jaundiced; the liver was enlarged, extending to the level of the umbilicus, as was also the spleen. The urine contained bile pigments. There was a leucocytosis of 10,500 per cmm., of which 68 per cent. were polymorphonuclears. The Wassermann reaction was positive although syphilis was denied and there were no residual signs of any primary venereal lesion. Examination of the faeces yielded negative results as regards amoebae, flagellates, or helminth infection. The diagnoses suggested from time to time were Hanot's cirrhosis, Banti's disease, malaria, and syphilis. Salvarsan did not improve the condition and on December 23rd emetine was tried, 8 cgm. being injected daily, and sodium sulphate was

given by mouth. Five days later examination of the faeces revealed amoebae both in the active and cystic forms. At the end of a week the general condition and the individual symptoms had vastly improved. Amoebae were found daily between December 28th and January 2nd, but not afterwards. A Wassermann reaction carried out on January 6th proved negative and by the end of February the spleen was no longer palpable and the liver extended only to one finger's breadth below the costal margin. The writer comments on the obscurity of the case and upon the provocative effect of injection of emetine in causing amoebae to appear in the stools.

H. Harold Scott.

Monges (Jules). **Les suites intestinales éloignées de l'amibiase.**—*Congrès de la Santé Publique et de la Prévoyance Sociale, Marseille, 11–17 Septembre, 1922. Rapports.* pp. 88–102.

Although the war has been finished for four years, a number of patients still suffer from dysentery. They complain at different times of their stomach, intestines, or liver, and some are thin, weak and anaemic. As a rule they have been thoroughly hospitalized. The author summarizes the different conditions of which these patients may complain.

Diarrhoea.—This may be of three types: (1) the mucous colitis type; (2) chronic enteritis type, and (3) the rectal muco-purulent type.

The first, the mucous colitis, is the most frequent. As a rule the patient is in good general condition, has a good appetite and digests his food well, but complains of intestinal pain. On the least indiscretion of diet he suffers from an acute diarrhoea, usually in the early morning, accompanied by colic and borborygmi; the stool is dark and bilious, sometimes green, with specks of mucus. The diarrhoea may be prandial, that is, may occur in explosive fashion immediately after a meal. Examination of the abdomen reveals nothing but slight tenderness on pressure, and the patient often suffers from secondary nervous manifestations.

(2). The chronic enteritis type.—As a rule this greatly affects the general health and may be very chronic, having lasted in one case for 18 years. The patient often has a yellowish or icteric tint. The abdominal pain is seldom intense, but may be paroyxsmal and localized to the hepatic flexure or right iliac fossa. Diarrhoea usually alternates with constipation; the stools are large and soft, and contain blood and mucus. The tongue is furred: some patients show gastric disturbances with frequent vomiting. The abdomen is generally flattened and easily palpated, and the large intestine can be made out throughout the whole of its course, especially at the sigmoid and hepatic flexures. The stomach is usually dilated. Cases of this description are often seen amongst French Colonials, who have returned to their country to die, having taken all sorts of remedies.

(3). The rectal muco-purulent type.—These patients exhibit the symptoms of rectitis, with the excretion of muco-pus. They usually are cases of unrecognized amoebic dysentery beginning with diarrhoea; the symptoms are localized in the lower part of the intestinal canal. The stools are frequently accompanied by tenesmus and a sense of burning pain. They have usually been ill for several years and exhibit various nervous symptoms.

Constipation.—Constipation may occur in three different forms, chronic habitual constipation in which continual laxatives or enemata

are necessary; muco-membranous constipation, accompanied by the passage of desquamated mucous membrane; and the dry recto-colitis form, diagnosed only by sigmoidoscopic examination, when the mucous membrane is seen to be dry and lustreless. The indications for treatment are laxatives plus emetine.

Gastro-intestinal dyspepsia.—Many people who have suffered from amoebic dysentery have trouble in the digestive tract, generally due to displacements of the intestinal tube. They may complain of either gastric or intestinal symptoms and of constipation and diarrhoea. They nearly always have neurotic symptoms, or it may be disturbances of the vasomotor system, headaches, blushings, or palpitations.

Intestinal haemorrhage.—This may be in small or large amount. Examination of the rectum shows absence of haemorrhoids, but, as a rule, the mucous membrane is very sensitive and there is usually spasm of the anus.

Appendicitis.—Symptoms of appendicitis may be due to amoebic ulceration of the neighbouring organs, or to an ulcer of the appendix itself. Such a case in an African native is quoted.

Stenosis of the intestine.—This rare condition is due to the cicatrization of amoebic ulcers which may involve all the coats of the intestine.

Fibrous tumours of the gut.—These tumours, which often develop in the colon, are of amoebic origin. They are sometimes mistaken for tubercular tumours, but can be distinguished easily on microscopic section.

Tuberculous enteritis.—Tuberculous ulceration of the gut can be grafted upon amoebic enteritis. It may or may not be secondary to pulmonary tuberculosis.

The true nature of these clinical manifestations must be verified by other investigations. On searching for the parasites several possibilities may arise: (1) one may not find any parasite; (2) one may find the cysts alone, or (3) in association with other parasites such as flagellates, the spirochaetes, or the eggs of ascaris and trichocephalus; (4) no amoebic cysts may be present, but the other parasites mentioned may be abundant.

The intestinal functions can be studied by investigation of the faeces, when undigested meat and vegetable fibres may be encountered. Radiography gives some idea of the muscular functions of the gut, or of intestinal adhesions, or stenosis. The sigmoidoscope generally reveals most interesting information: (1) the mucous membrane may appear normal; or (2) chronically congested and covered with glairy mucus; or (3) ulcerated, when the typical amoebic lesions may be recognized; (4) the dry recto-colitis already mentioned may be discovered.

All these conditions persist unless specifically treated. The author considers that to deny emetine except to patients with amoebae or cysts in their stools, is not good practice; one should exhibit it in any case with obscure intestinal symptoms not explicable on any other basis.

P. H. M-B.

PETZETAKIS. **L' "amibiase rénale." Un cas de néphrite amibienne. Action curative et diurétique de l'émétine.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1923. Aug. 2. 3rd Ser. Year 39. Vol. 47. No. 27. pp. 1233–1235.

In course of researches on amoebic bronchitis the author has elaborated a method for the examination of the urine for amoebae,

and records one case in which he thinks these organisms were the cause of a nephritis. The case was a man 50 years of age who had suffered from dysentery and whose urine showed casts, both granular and haemorrhagic, indicative of a subacute nephritis, and, in addition, active entamoebae containing red cells, and more rarely cysts. The patient suffered from polyuria and oedema. He is said to have entirely recovered on emetine treatment, which the author believes has a definite diuretic action.

P. H. M-B.

GORDON (R. M.). **The Treatment of Amoebic Dysentery.**—*Ann. Trop. Med. & Parasit.* 1923. Oct. 13. Vol. 17. No. 3. pp. 381–387. [2 refs.]

The author treated 150 cases of amoebic dysentery in the tropical ward of the Royal Infirmary, Liverpool, and kept them under observation for 1–6 months. (1) The initial diagnosis was made by the finding of motile entamoebae containing red blood corpuscles in the faeces. (2) Such a patient was considered to have relapsed when after completion of treatment diarrhoea recurred, and active entamoebae were observed in the stool. (3) Cases which after treatment continued to pass *E. histolytica* cysts unaccompanied by motile entamoebae were not considered to have relapsed. (4) Once a patient had relapsed he was considered as a fresh case and any other course of treatment was placed under a separate entry.

In the course of treatment, and for the first fortnight after, the stools were usually examined twice weekly; during the remainder of the observation period the examination averaged once a fortnight.

Amongst the 150 cases observed, 101 or 66 per cent. relapsed, but only 6 were observed to be passing *E. histolytica* cysts after treatment. Sixteen cases were given emetine periodide 6 grs. daily, and of these 8, or 50 per cent., relapsed within one month. The administration of this drug in gelatine capsules was found to be unsatisfactory as they frequently passed through the gut without dissolving, but when the periodide powder was given mixed with a little milk it did not produce vomiting.

A limited number of cases have been treated with Yatren as recommended by MUHLENS and MENK. The drug is given by the rectum for 8–14 days on end and repeated after a week's rest A seemingly satisfactory result was obtained on a patient who had resisted all forms of treatment for five years. The organism disappeared from the faeces and there was a reduction in the number of the stools, but unfortunately the patient relapsed one month later.

P. H. M-B.

RALLI (A.) & PANAYOTATOU. **L'emploi de l'émétine dans le service de la consultation externe de l'hopital hellénique d'Alexandrie (Egypte).**—*Presse Méd.* 1923. Aug. 29. Vol. 31. No. 69. pp. 742–744. [2 refs.]

These observations have been made upon patients of all nationalities, principally Greeks. The last ten years the authors have given as many as 20 injections of emetine daily during the summer months. The brand employed was that of Burroughs, Wellcome & Co.

As regards amoebiasis, two classes of cases are dealt with: (1) primary cases of dysentery, and (2) those which have become chronic

either through carelessness, or incomplete treatment. The great obstruction to efficient treatment is that, owing to the therapeutic action of the drug, the patients cease to attend after the third or fourth day; it is usual to give 6·5 to 8·5 centigrams at one injection.

The authors are rather exceptional in considering that cases of amoebiasis can be cured by a series of 6–7 injections given every other day of 4 cgm. at a time, and that the disappearance of symptoms is much more important than the microscopic examination of the stools. Novarsenobenzol and other derivatives of salvarsan are considered to be supplementary in action to emetine.

As regards amoebic hepatitis the authors are of the opinion that, if emetine is promptly applied, the formation of liver abscess can be prevented. As direct evidence they quote the statistics which have already been published showing that before the introduction of emetine a total of 20–40 abscesses of the liver were operated upon, and now only 3–5. Hepatic complications are seldom seen in children, but on them also emetine has a remarkable effect. In their case 1½–3 mgm. is considered a proper dose.

A form of pseudo-appendicitis is recognized as being due to latent ulceration of the caecum. Haematuria is considered as another manifestation of amoebiasis; on what grounds, is not clear, while the drug is said to have been of very considerable use in checking the haemorrhage of urinary schistosomiasis. It is not suggested that the drug kills the adult trematodes in the same way as tartar emetic. The drug is of importance also in haematuria of other origin; four conditions in which emetine acts favourably are said to be chronic congestion of the liver, catarrhal jaundice, the hepatic congestion of malaria and haemoptysis.

P. H. M-B.

MATTEI (Charles). **Les données actuelles sur l'emploi de l'émétine dans l'amibiase.**—*Congrès de la Santé Publique et de la Prévoyance Sociale, Marseille, 11–17 Septembre, 1922. Rapports.* pp. 103–127. [35 refs.]

This is a monograph on the subject of emetine and especially of its chemistry.

Although regarding this drug as a specific for the acute stages of amoebic dysentery, the author considers that it has little or no action on the cysts, which are protected by their resistant envelope. For the intestinal canal it should be replaced by emetine bismuth iodide. intravenous injections, he considers, are dangerous and useless. When given by rectal injections emetine is apt to cause a recrudescence of the symptoms and may provoke an acute attack of amoebic dysentery.

He considers the drug especially efficacious in amoebic hepatitis and so convinced is he of its specificity that he thinks the therapeutic test may be used to diagnose hepatitis of amoebic origin.

P. H. M-B.

ROUX (F.). **Treatment of Amoebic Dysentery by Injections of Total Ipecacuanha.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. June 21. Vol. 17. No. 3. p. 213.

The disadvantage of the use of emetine in amoebic dysentery is that the cure is of short duration. The author therefore utilized a hypodermic injection of total ipecacuanha which has given excellent

results in Madagascar where it is put up in ampoules containing 20 cgm. to 1 cc. of liquid. In severe cases two are injected per diem and at the same time rectal enemata of Tochlorine of 5–10 grm. in a litre of water are given twice daily. After four or five injections the patients evacuate fragments of intestinal mucosa containing amoebae. In cases of tenesmus pills of benzylbenzoate and benzaldehyde are used, each containing 25 cgm. of these substances.

The author says it is not necessary to continue treatment beyond four or five days, and none of his cases has relapsed.

P. H. M-B.

Menk (W.). **Nuevas observaciones acerca del tratamiento de la disentería amibiana.** [The Treatment of Amoebic Dysentery.] —*Rev. Méd. de Hamburgo.* 1922. Vol. 3. No. 8. pp. 237–238.

Yatren (Behring-Werke) was employed in the treatment of 17 patients suffering from chronic amoebic colitis who had proved resistant to emetine and other drugs. The dose for adults is 3–6 gm., per rectum, in 200 cc. of water at 80° C., and should be retained as long as possible. If rectal administration is contra-indicated the drug may be given by mouth, 1 gm. three times a day. It is given daily for 6–8 days and after an interval of 3–6 days repeated; this is maintained for five or six weeks.

Three of the cases were uninfluenced; in others the amoebae rapidly disappeared, but in two instances returned "after a time"; two developed an abscess of the liver, one of which ruptured into the lung, but both recovered with further treatment by Yatren and without operation.

Yatren can be given with emetine and the author recommends that six doses of the former, 0·5 gm. each, be taken by mouth for two or three days with injections of the latter, then alternating periods of Yatren and emetine, and concluding with the former alone. The details of the duration of these latter treatments are not stated.

H. Harold Scott.

i. De Langen (C. D.). **Yatreen in de behandeling der Amoebendysenterie.** [Yatren in the Treatment of Amoebic Dysentery.]— *Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 3. pp. 442–447.

ii. Lichtenstein (A.). **De behandeling van Chronische Amoebiasis met Yatreen.**— *Ibid.* No. 4. pp. 612–619. [2 refs.]

i. Reports on 36 cases (21 chronic, 10 relapses of known chronic cases, 4 acute attacks and 1 amoebic liver) treated with yatren with very satisfactory results from clinical as well as from parasitological point of view. Apart from the diarrhoea it causes, the treatment is well borne. A varied light diet during the cure is recommended.

ii. Four cases are quoted, one with complete clinical and protozoological success, one with clinically good results, but possibly failure from the etiological point of view, one with complete failure of the cure and one in which the cure had to be interrupted on account of the untoward symptoms caused by the drug. The author asserts that equally good results may be obtained by internal administration of neosalvarsan (which is much cheaper) and warns against exaggerated expectations of the effect of yatren.

W. J. Bais.

Nogue & Leger (M.). **Essais de traitement de la dysenterie amibienne aiguë par le Stovarsol.**—*Bull. Soc. Path. Exot.* 1923. July 11. Vol. 16. No. 7. pp. 557–559.

Stovarsol in the treatment of dysentery was introduced by Marchoux. It is put up in cachets of ·25 grammes, and latterly the authors have been treating acute cases of amoebic dysentery in natives with this drug. The doses which they have given are larger than those recommended by Marchoux, *i.e.*, 29 cachets in a period of 13 days, with a break on the 4th, 8th and 12th days. The patients received no other treatment whatsoever.

The three cases reported, all of whom had blood-and-mucus stools containing *E. histolytica*, did well, although the first relapsed nine days after treatment, and had to be subsequently treated with emetine.

The difficulty in assessing the value of stovarsol lies in the fact that in negroes, according to observation, amoebic dysentery tends to recover spontaneously.

P. H. M-B.

Jachontoff (I. E.). **Cuprum kalium cyanatum bei Amoebendysenterie.**—*Rev. Microbiol. et Epidemiol.* Saratov. 1923. Vol. 2. No. 1–2. In Russian, pp. 24–26. Abridged Version in German, pp. 89–90.

In recent years salvarsan and emetine have been unprocurable in Russia; recourse was therefore had to other substances. The potassium cuprocyanate in doses of 0·01–0·02 gm. in 10–20 cc. of a 0·85 per cent. NaCl solution was given intravenously every third day. No ill effects were observed, but in cases complicated with pulmonary tuberculosis a rise of temperature invariably took place. Altogether 9 cases of amoebic dysentery were treated in this manner, 5 chronic and 4 subacute; the former were completely cured and were kept under observation for a year. The improvement in the acute cases was marked; the entamoebae disappeared from the stools and at the same time the patient increased in weight and experienced a sense of well-being.

P. H. M-B.

Bercovitz (Nathaniel). **A Comparison of the Cysts of *Endamoeba coli* and *Councilmania lafleuri* in Congo Red.**—*Univ. California Public. Zool.* 1923. Feb. 1. Vol. 20. No. 15. pp. 365–371. [2 refs.]

In the course of an investigation of the receptivity of living cysts of intestinal Protozoa to various aniline stains the author noticed that of the species of living cysts coming under observation—*Entamoeba histolytica, Endolimax nana, Iodamoeba buetschlii, Chilomastix mesnili, Giardia intestinalis, Entamoeba coli*, and the organism described as *Councilmania lafleuri*—all were impermeable to stains except *Entamoeba coli* and *Councilmania*, living cysts of which could take up the particular stain Congo red, though they did not always do so.

The susceptibility of these two to Congo red, however, was found to be variable, sometimes the Congo red had no effect on Councilmania cysts, sometimes it stained them deeply; occasionally it also stained *E. coli* cysts deeply, often both kinds of cysts took only a faint pinkish stain. The author therefore made an attentive and exact study of the living cysts in 100 cases, 39 "showing *E. coli* infection," 57 "showing Councilmania infection," and 4 with both, and found

that of *E. coli* cysts 43·6 per cent. did not stain with Congo red and 56·4 per cent. did, and that of Councilmania cysts 15·7 per cent. did not and 84·3 per cent. did take the stain. [The author does not suggest any explanation of the phenomena but they rather support the view of those who regard Councilmania cysts as damaged cysts of *E. coli*]. The author, of course, made sure that the cysts were living.

A. A.

Robertson (Andrew). **Note on a Case infected with *Dientamoeba fragilis*, Jepps and Dobell, 1917.**—*Jl. Trop. Med. & Hyg.* 1923. July 16. Vol. 26. No. 14. pp. 243–244. [2 refs.]

Case of a young women, brought up in South America and afterwards resident in Egypt and in India, who had been subject to intestinal disturbance all her life, had suffered from amoebic dysentery in India and since then from attacks of diarrhoea and tenderness along the course of the colon. Besides a fairly constant supply of *Dientamoeba fragilis*, the stools furnished *Blastocystis hominis* in profusion, Trichomonas, Chilomastix, *Endolimax nana*, and four species of Spirochaetes.

A. A.

Faust (Ernest Carroll). **A New Type of Amoeba Parasitic in Man observed in North China.**—*Jl. Parasit.* 1923. June. Vol. 9. No. 4. pp. 221–226. With 2 plates. [5 refs.]

The amoeba here introduced to science was found, in northern China, in stools of four cases of dysentery. Three of the cases were acute, one was chronic. One of the acute cases was lower-class European, the other cases were native Chinese. In two of the acute cases this new amoeba was the only organism observed in the stools, in the other two it was found in company, in one instance with *Entamoeba histolytica* and *coli* and flagellates, in the other instance with *E. histolytica* only. The author considers it to be a new species and to represent a new genus, and gives the following summary of his paper :—

"*Caudamoeba sinensis*, nov. gen., nov. sp., a new amoeba from man is described.

"The organism is characterized by viscous endoplasm, thin layer of ectoplasm, antero-posterior polarity, lobose anterior and attenuate posterior end drawn out into a caudostyle, which is surrounded at times by a group of protoplasmic projections more or less conspicuous, a constant movement of the organism away from the caudal end, and a nucleus near the anterior end of the body with minute chromatin granules just within the nuclear membrane, together with a karyosome specifically different from that of the described entamoebae of man.

"The organism . . . is phagocytic for red blood corpuscles and for bacteria and in two instances was the only micro-organism in the stool suspected of being pathogenic.

"Cases containing only this organism in the stools gave typical history and symptoms of amoebic dysentery.

"Emetine is a specific for the infection. The organism succumbs in the course of a few treatments and does not re-appear in the stool after a course of treatments. In this respect it is apparently more amenable to treatment than *Entamoeba dysenteriae*" [=*histolytica*.]

In the plates accompanying the paper, figures and photomicrographs are given of the active and quiescent amoeba and a figure of the precystic stage.

A. A.

Mello (U.). **L'Amebiasi nei Primati.** [Amoebiasis in Monkeys.]—*Ann. d'Igiene.* 1923. Aug. Vol. 33. No. 8. pp. 533–552. With 2 plates [31 refs.]

It is already well known to all who have studied the subject that monkeys commonly harbour in their intestines two species of Entamoeba which are very closely similar to the two species of the same genus (*E. coli* and *E. histolytica*) which occur in man. Some workers believe, indeed, that the species found in monkeys are identical with those found in man; but others consider them to be distinct, and accordingly assign different specific names to them. [The present reviewer has summarized the literature on these organisms in his book on *The Amoebae living in Man* (1919), pp. 131–133, and has there pointed out that it is impossible, at present, to distinguish these amoebae of monkeys with certainty from *E. coli* and *E. histolytica*; but that if they should ultimately be shown to be distinct species, then the one resembling *E. coli* should be called *E. pitheci* Prowazek, 1912, while that like *E. histolytica* should be known as *E. nuttalli* Castellani, 1908.] The author of the paper under review has restudied the amoebae of monkeys and now gives us the results of his work in what he himself calls "a modest contribution" to the subject.

The author began his investigations in 1913 at the Pasteur Institute, Paris, in the laboratory of the late Prof. Laveran, and completed them, after the War, at Turin. At Paris he had a considerable material at his disposal, consisting of some 80 laboratory monkeys of various species; but the majority of his observations were made upon the faeces of 11 individuals of *Macacus cynomolgus*, 5 *M. rhesus*, 3 *M. sinicus*, 3 *Cynocephalus* [sp. ?], 2 *Cercopithecus patas*, one orang-utan and one chimpanzee—all of which were found to be specially well infected with amoebae. In addition, the author was able to make post-mortem examinations of the lesions in one *M. cynomolgus* and one *M. rhesus* which died suffering from amoebic dysentery.

Detailed findings from this series of monkeys are not recorded; but it appears that an amoeba closely resembling *E. histolytica* [*i.e.*, "*E. nuttalli*"] was found in *M. cynomolgus*, *M. rhesus*, *M. sinicus*, *C. patas*, and *Cynocephalus*, whilst an amoeba resembling *E. coli* [*i.e.*, "*E. pitheci*"] was found "in 75 per cent. of the monkeys in the Pasteur Institute." In agreement with previous workers, the author found that the first species was sometimes pathogenic, giving rise to typical amoebic dysentery with characteristic ulcers in the large intestine, whereas the second species appeared to be non-pathogenic. The only real addition—but it is an important one—which he makes to our knowledge of these two species is recorded in the following experiments (p. 543):

"Dysenteric faeces" from *M. sinicus* [containing amoebae of the *histolytica*-like species] were injected intrarectally into two kittens: 15 and 19 days afterwards, respectively, these two animals displayed dysenteric symptoms, with large numbers of amoebae in their dejecta. The symptoms increased in severity until two months had elapsed since the inoculations were made. [At this juncture the author left Paris, apparently without ascertaining the final result of his experiment, though he is persuaded that the death of both kittens was then imminent.] Further, "dysenteric faeces" [from what species of monkey is not stated] were similarly injected into 5 rats: and within 20 days two of these died with "characteristic lesions" in the large intestine, and "numerous parasites in the focus of infection."

Unfortunately no further details of these experiments are recorded, but they appear to show that "*E. nuttalli*," like *E. histolytica*, can parasitize cats and rats as well as monkeys; and they thus supply further evidence of the close similarity—or maybe even identity—of these two species. The author quotes [though not always accurately, and sometimes profoundly erroneously—as when he states (p. 535) that KARTULIS observed a case of amoebic liver-abscess in an orang-utan at Manila in 1913 !] the observations of previous workers on the amoebae of monkeys, but he is evidently confused by the apparent discrepancies in their descriptions. He also says something about the amoebae of man: but here, too, he seems unable to feel his way among the conflicting evidence, and not unnaturally, therefore, he infers that our knowledge of all these organisms is still in a state of chaos. Nevertheless, he concludes that, "notwithstanding the uncertainties which still remain to be cleared up concerning amoebiasis generally," he is justified in assuming that the two species of amoeba which he has studied in monkeys are "perfectly identical" with "ameba coli" and "ameba dissenterica" [*i.e., E. coli* and *E. histolytica*].

In addition to discussing the two species already mentioned, the paper contains an account of a "new species" of *Entamoeba*—called *E. multinucleata*—found in the faeces of an orang-utan (which was also infected with "*E. nuttalli*"). From the description, this organism appears to differ in no way from "*E. pitheci*," save in that it is said to form—in addition to the usual 8-nucleate cysts characteristic of this species—peculiar "multinucleate" cysts which subserve the purpose of schizogony. [Apart from six unconvincing figures illustrating this questionable process, the interpretation is supported only by a drawing (Pl. II, fig. 15) of what is manifestly merely a supernucleate cyst of *E. pitheci*: and it is evident that this "new species" has little to justify its introduction.]

In conclusion, the author notes that he has also found an amoeba belonging to the genus "*Wahlkamphia*" [? *Endolimax* sp. or *Iodamoeba* sp.] in "various species of monkeys"; a species of the genus "*Löschia*" [a synonym of *Entamoeba*] in *M. cynomolgus* and *M. rhesus*; as well as *Blastocystis* "in various monkeys" on frequent occasions. He also mentions incidentally (p. 548) that he found a *Trichomonas* in the faeces of an orang-utan.

[The author of this paper appears to have been hampered by an imperfect acquaintance with the science of protozoology; and though he makes many references to the works of others, his spelling of proper names is frequently at fault, and not seldom so wrong as to render his references unintelligible to anybody unversed in the literature. For example, while it is possible that many a reader may guess that "NOA," "TICKHORN," and "WEYON," stand respectively for NOC, EICHHORN, and WENYON, it is not everybody who will be able to recognize PROWAZEK and LYNCH under the designations of "TRAWAGECH" and "LEYNEH." These and numerous other minor misprints and errors mar much of what the author has to say, and often add to the difficulty of understanding and adequately appraising his findings.]

Clifford Dobell.

i. Hung-See-Lü. **Zur pathologischen Anatomie der Amöbenruhr.**—*Virchows Arch. f. Path. Anat. u. Physiol.* 1923. May. Vol. 243. pp. 478–508. With 10 figs. [52 refs.]

ii. Cilento (R. W.). **Amoebic Dysentery in Australia.** [Correspondence.]—*Med. Jl. Australia.* 1923. July 7. 10th Year. Vol. 2. No. 1. p. 23.

i. This elaborate and well illustrated study of the pathology of amoebic dysentery is founded upon material collected on the Western front during the War, but adds little to our previous knowledge of the morbid histology of this disease.

ii. Points out that amoebic dysentery is probably widespread in Australia tending especially to occur in mining centres.

P. H. M-B.

Bacillary Dysentery.

Guimarães (Aristides), Lima (Moacyr de Souza) & Pisa (Alarico de Toledo). **Dysenteria bacillar.**—*Brazil Medico.* 1923. July 21. Year 37. Vol. 2. No. 3. pp. 42–47.

In November 1921, 15 patients were admitted to hospital with symptoms of acute dysentery. All proved to be of the bacillary type and in each case the Shiga bacillus was isolated from the faeces on Endo's medium. The organism is described as motile, but very conclusive tests were carried out with it, not only cultural but also serological, inoculatory, and toxin preparation by the Neisser-Shiga and Conrad methods, followed by further inoculation tests with the toxin so obtained.

H. Harold Scott.

Papamarku (P.) & Steenhuizen (S.). **The Epidemic of Bacillary Dysentery in the Dairi-Lands, 1921–1922.**—*Meded. Burgerlijk. Geneesk. Dienst in Nederl.-Indië.* 1923. Pt. 2. pp. 161–184. With 1 map and 7 charts. [39 refs.]

These observations were made in Sumatra, where a dysentery epidemic prevailed from November 1921 till October 1922, aggravated by the holding of a big fair attended by some 4,000 people. The region is mountainous for the most part and is watered by several rivers; it contains no roads, but only foot-paths. The population amounts to about 33,000 and consists of three groups which speak different languages, are very primitive in their habits, and much addicted to opium.

The epidemic is attributed to carriers of the bacilli, especially those showing chronic symptoms of dysentery; the author has been unable to trace any connexion between the outbreak and the water supply, but the uncleanly habits of the natives rendered direct infection from one person to another extremely easy. A tentative diagnosis of bacillary dysentery was made upon the cytological appearance of the stools. The epidemic reached its height in January 1922 with 108 cases, the morbidity rate being 2·44 per cent. In all 339 patients were isolated and treated. The Shiga bacillus was recovered only 8 times out of 20 examinations.

The greater part of the paper gives in detail the special sanitary measures employed, which are not of general interest. The best therapeutic results were obtained with the polyvalent dysentery

serum at Weldtewreden. The mortality rate of patients injected with serum amounted to 11·5 per cent., a rate not thought to be high considering the great difficulty of transport, etc. The staying of the epidemic is attributed mainly to early isolation of freshly infected cases.

P. H. M-B.

BOURDINIÈRE. **Considérations sur le développement de la dysenterie épidémique au cours de l'année 1921.**—*Rev. d'Hygiène.* 1922. Nov. Vol. 44. No. 11. pp. 1034–1038.

Since the war epidemicsof dysentery have occurred yearly in Brittany, appearing to extend from isolated centres, the starting point being attributable to some carrier of bacillus. The 1922 epidemic took origin at the beginning of August in a military camp, and its spread, as elsewhere, appeared to be controlled by changes in temperature, and ceased with the onset of frost and rain. The contagiousness of the infection appears to be specially remarkable and to be related to the prevalence of houseflies. The bacillary variety prevailed; only one instance of amoebic dysentery, confirmed at autopsy, having been recorded.

Statistics regarding the morbidity from bacillary dysentery being imperfect, it becomes almost impossible to assess the mortality from this cause, though it is known that several families have lost three or four members. As a cause of death bacillary dysentery ranks next to tuberculosis. In view of the difficulty of enforcement of the necessary sanitary precautions, antidysenteric prophylactic inoculations both by the oral and subcutaneous route, appears to be the most practicable measure and is now being employed.

P. H. M-B.

BOLTON (J. Shaw) & MCGRATH (M. J.). **Asylum Dysentery and Allied Infections. (Fourth Post-War Report.)**—*The Ninth Annual Report of the Board of Control for the Year 1922. Lunacy and Mental Deficiency.* pp. 65–73.

This report gives an account of the work performed during last year at the West Riding Mental Hospital, Wakefield. As the result of the special measures employed, infections with dysentery bacilli are becoming increasingly rare. Of 116 specimens only 14 gave positive results, Flexner's bacilli being found in 7 cases, *B. proteus* in 4, and Morgan's bacillus No. 1 in 3. During the year the serum of 447 new patients was tested against Flexner's bacillus and *B. typhosus*; 40 agglutinated B. Flexner and 6 *B. typhosus*. The examination of post mortem material in 192 cases was singularly disappointing, Flexner's bacillus being obtained in one case only.

P. H. M-B.

REEVE (E. F.) & WATSON (G. A.). **Report on Dysentery for the Year 1922.**—*The Ninth Annual Report of the Board of Control, for the Year 1922. Lunacy and Mental Deficiency.* pp. 76–77.

In the Lancashire County Mental Hospital, Rainhill, there was an outbreak of diarrhoea affecting 90 patients, and the Y bacillus of dysentery was isolated in 19 males and 47 females. The epidemic which ceased as suddenly as it commenced was of a mild nature,

so much so indeed that in the absence of microscopical examination the cases would not have been classed as dysentery. In three cases at a later period of the year infection with *E. histolytica* was discovered.

P. M. M-B.

Löhlein (M.). [**Ueber die sogenannte follikuläre Ruhr.**] [The So-called Follicular Dysentery.]—*Veroffentlichungen aus dem Gebiete der Kriegs- und Konstitutions-pathologie.* 13 Hefte. Gustav Fischer, Jena. 1923. [Summarized in *Muench. Med. Woch.* 1923. Sept. 21. Vol. 70. No. 38. p. 1206.]

There has recently been a discussion whether dysentery begins in the follicular tissue of the gut. Some authors, notably Löhlein, believe that the dysentery bacillus does not primarily affect the follicles, but that they are invaded together with the rest of the mucous membrane. The characteristic button-hole ulcers of bacillary dysentery are formed as the result of suppuration, while the deep ulcers of amoebiasis and balantidiasis are caused by the local necrotic action of the several organisms.

P. H. M-B.

Gardner (A. D.). **The Agglutination of Standard Agglutinable Cultures of the Flexner-Group of Dysentery Bacilli by Non-Dysenteric Human Sera.**—*Jl. of Hyg.* 1923. Aug. Vol. 21. No. 4. pp. 399–405. [16 refs.]

The degree to which the serums of healthy persons will agglutinate Flexner-group bacilli depends greatly upon the technique employed, and upon the sensitiveness of the strain cultivated. The figures recorded have ranged between 1 in 20 and 1 in 2,500. The results are here recorded of the degree to which standard agglutinable cultures of five serological Flexner-group bacilli are agglutinated by known dysenteric sera ; certain of these cultures are more highly agglutinated by some normal human sera than was anticipated. There apparently is no limit above which a "normal" serum will be found not to react and the repetition of agglutination tests capable of measuring the fluctuation of agglutinins in active infections is the only safe scientific procedure. [For technical details this paper must be consulted in the original].

P. H. M-B.

Iijima (Tsunenori). **The Presence of Heterophile Antigen in Bacteria, with Special Reference to Shiga's Dysentery Bacillus—a Contribution to the Study of Forssman Antigen and Antibody.**—*Jl. Path. & Bact.* 1923. Oct. Vol. 26. No. 4. pp. 519–534. [12 refs.]

The contents of this technical paper may be judged from the conclusions :—

"i. *B. dysenteriae Shiga* contains heterophile (Forssman *) antigen, as is shown by the fact (*a*) that it exhibits the characteristic reactions with antisera containing Forssman antibody, and (*b*) that when injected into suitable animals, such as rabbits, it generates Forssman antibody.

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* *See Biochem. Ztschr.*, 1911, Vol. 37, p. 78.

"ii. The Forssman antibody contained in anti-Shiga immune serum derived from the rabbit is independent of the specific agglutinin, since absorption of the Forssman antibody by goat's red corpuscles leaves the agglutinin content of the serum unaltered.

"iii. Toxic effects following the injection of vaccines of Shiga's bacillus in certain cases may be of anaphylactic nature, since the serum in a certain proportion of human subjects contains a large quantity of Forssman antibody.

"iv. *V. cholerae*, *B. typhosus*, *B. paratyphosus B.*, and *B. gaertneri* do not contain Forssman antigen."

A. G. B.

Brokman (Henryk). [**Badania nad wrazliwoscia ludzi na jad czerwonkowy w zwiazku z zagadnieniem osobniczej odpornosci. (Recherches sur la sensibilité de l'homme à l'action de la toxine dysentérique en rapport avec l'immunité individuelle).**]—*Polska Gazeta lekarska.* 1923. June 3. Vol. 2. No. 22. [Summarized in *Bull. Inst. Pasteur.* 1923. Oct. 15. Vol. 21. No. 19. p. 765.]

The author has applied the Schick reaction to dysentery in man in the following manner: 0·1 cc. of Shiga dysentery toxin, in a dilution of 3 to 100, was injected under the skin. Contrary to what takes place in laboratory animals, a very considerable reaction is produced in man. At the end of 24 hours a diffuse red infiltration appears, gradually turning blue. When the reaction is stronger the skin becomes blue and afterwards deep brown; while at the end of a week an ulcer forms, sometimes with suppuration, but in the majority of cases there is only transient inflammation. All possible stages were observed in a series of 200 cases in which there were 80 per cent. of positives and 20 per cent. of negatives.

The reaction becomes negative after injection of anti-dysenteric serum. The author thinks that this reaction indicates the presence of anti-toxic bodies in the serum of people who give a positive reaction.

P. H. M-B.

i. Goedbloed (C. A. G.). **Een geneesmiddel bij chronische bacillaire dysenterie.** [A Cure for Chronic Bacillary Dysentery.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 3. pp. 481–484.

ii. Ono (Kōsaku). [**Vergleichende Untersuchung der Darmveränderungen durch die Infektion verschiedener Typen von** *Bacillus dysenteriae.*]—*Ni. Byor. Gak. K.* Tokyo. 1921. Vol. 11. pp. 406–408. [Summarized in *Japan. Jl. Med. Sciences.* Tokyo. 1922. Vol. 1. No. 1. pp. 68–69.]

i. Recommends a decoction (1 : 10) of *Caesalpinia sappan L.*, a tablespoonful every hour, as being easier taken and more effective than the usual astringents (simaruba, cortex granati, etc.).

W. J. Bais.

ii. Whether the different dysentery bacilli produce different pathological appearances in the gut has been an open question. The author therefore examined 24 cases of different infections, with the result that he found minor differences in the degree of oedema, hyperaemia, swelling of the follicles, and the appearance of the ulcers.

P. H. M-B.

Mixed and Unclassed Dysentery.

Cunningham (J.). **Some Observations on Dysentery.**—*Indian Med. Gaz.* 1923. Aug. Vol. 58. No. 8. pp. 358–363. With 1 chart. [8 refs.]

In Eastern Bengal the author found 86·5 per cent. of his dysentery cases were bacillary in origin ; 7·7 per cent. were due to the *Entamoeba histolytica* and 5·7 per cent. to a mixed infection of bacilli and entamoebae. He is therefore convinced that the bacillary is by far the commonest type of dysentery met with in India, and it follows that the wholesale injection of emetine is no longer justifiable. The mixed infections he thinks are much commoner than was formerly believed. Bacillary dysentery, or jail dysentery, can be classified into the acute or fulminating, subacute, and chronic. The term " subacute " denotes merely a collection of symptoms ; it may refer to one attack only or numerous relapses. The term " chronic " dysentery is reserved for a very definite clinical entity which was formerly described as a separate disease by Norman Chevers, under the heading of *Morbus bengalensis*.

The acute dysenteries are usually due to Shiga's bacillus, but the great majority of cases in the endemic area, *i.e.*, 77·7 per cent., are subacute. In about 50 per cent. of these cases an attack of bacillary dysentery has preceded, and the symptoms of this form tend to disappear of their own accord, though they may be cut short by magnesium sulphate treatment. Post-dysenteric arthritis is rare in India ; on the other hand neuritis is a most definite complication. It may attack the arm or the leg, producing paraesthesia ; in one instance there was paralysis of the external popliteal nerve. Hepatic cirrhosis with ascites may supervene and has been ascribed to the toxins of the dysentery bacillus. Advanced cases of chronic bacillary dysentery are emaciated to an extraordinary degree. In one instance—an adult male Indian—the weight recorded was 58 lbs. ; death terminated in a semi-comatose condition with incontinence of urine and faeces. The stools are usually copious and diarrhoeic in character. Death may take place from inanition or from oedema, which does not appear to be cardiac in origin.

The term " latent dysentery " is reserved for those cases in which, although the patient appears to be in normal health, blood, mucus, and intestinal cells are found in the stools. These cases are liable to an explosion of clinical dysentery at any moment. In this connexion the author examined 3,460 individuals from four jails. In 411 cases, or 11·88 per cent., the faeces were found to have a dysenteric character, but by more frequent examinations, on ten successive days, the percentage of dysenterics was raised to 22·8. The proof that these were actual cases of bacillary dysentery in a latent stage is founded upon the fact that in 50 per cent. of cases examined by the sigmoidoscope actual ulceration of the rectum was found, while 24 per cent. latent cases noted passed through an acute attack of the disease in a period of observation of less than six months. Bacteriological examination of the stools of 68 individuals in the latent stage showed the bacilli of dysentery in 26·7 per cent.

These cases are important to the community because (*a*) they themselves tend to increase the incidence of the disease, and (*b*) they act as potential carriers.

It is suggested that by systematic microscopic examination of the stools and isolation of all potential carriers much may be done in the way of limiting the spread of the disease.

P. H. M-B.

DUFFAU (H. E.). **Dysenterie amibienne et dysenterie bacillaire associées.**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1923. May. Vol. 3. No. 2. pp. 151–153.

A report of two cases of intestinal amoebiasis with superimposed bacillary infection. The first appears to have been a chronic case with *E. histolytica* cysts; Shiga bacilli were isolated from the mucus of the stools and the patient recovered rapidly on serum treatment. The second patient had acute symptoms of amoebic dysentery with active forms of *E. histolytica*. During convalescence he seems to have contracted a bacillary infection and recovered after vigorous serum treatment. It was considered that in both these cases amoebiasis was the primary condition.

P. H. M-B.

MAITRA (G. C.). **Dysentery in the Colliery Areas. Five Months' Work in the Jheria Mining Settlement.**—*Indian Jl. Med. Res.* 1923. July. Vol. 11. No. 1. pp. 296–304. With 1 chart. [13 refs.]

The majority of cases observed on these coal-fields were found to be bacillary in origin, and in light of our present knowledge ankylostomiasis, which is very prevalent, would appear to be the most important predisposing cause. Apparently classical dysentery forms only a very small proportion of the bowel diseases in this area. The stool cultures were positive in seven cases only. Flexner's bacillus was commoner than that of Shiga.

P. H. M-B.

ADACHI (Kiyohisa). [**Ueber die Ätiologie von "Ekiri."**]—*Fukuoka Ikw. Daig. Z.* 1921. Vol. 14. 45. [Summarized in *Japan Jl. Med. Sciences.* Tokyo. 1922. Vol. 1. No. 2. pp. 153–155.]

Ekiri is an acute disease of children which is especially common in the summer months in Fukuoka, where it is endemic. According to the author's researches the disease is a form of dysentery produced by a dysentery-like bacillus which has no flagella, produces no gas, but clots milk in two or three weeks. It was first isolated from the gut wall of a child dead of a rapid infection, and later from 17 other cases. Its pathogenicity is inferred from its discovery in the tissues and its serological reaction. The colonies resemble those of Flexner's bacillus, but are larger. It produces no indol in peptone water; in litmus the milk is first turned red, then blue, and later returns to the former colour. Injection of this organism into rabbits produces diarrhoea and paralysis of the extremities. The author is of the opinion that it is allied to the bacillus of BAERTHLEIN and THJØTTA. On the other hand Dr. ITO, an authority on this subject, considers *Bacterium coli* to be the responsible organism.

P. H. M-B.

Broughton-Alcock (W.). **Case of Spirochaetal Dysentery.** (Abstract.)—*Proc. Roy. Soc. Med.* (Sect. Trop. Dis. & Parasit.). 1923. Aug. Vol. 16. No. 10. pp. 46–47. [1 ref.]

——. **Some Observations on Spirochaetic Dysentery.**—*Jl. State Med.* 1923. Oct. Vol. 31. No. 10. pp. 457–460.

The investigations of this author have led him to attach etiological significance to the spirochaete called *S. eurygyrata* (Werner 1909), in chronic and intermittent cases of dysentery. This organism occurs in great numbers in the mucus passed in the acute or subacute stage of such cases. It is not found in the faeces, and it is said that when spirochaetes occur in the latter situation they are examples of *S. stenogyrata*, which is non-pathogenic. Two cases are quoted of acute dysentery in which the organism occurred in large masses in the mucus, and no other cause of the illness, either protozoan or bacterial, could be demonstrated. There is no known specific treatment.

P. H. M-B.

Boon van Ostade (C. M.). **Coccidiosis bij den mensch.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 4. pp. 670–674. With 1 text fig.

A case of infection with *Isospora hominis* is described in a Malay man, suffering from chronic diarrhoea with slimy but bloodless stools. The infection must have been acquired in Java or Sumatra. No other cause was detected for the diarrhoea, which remained uninfluenced by emetine, neosalvarsan, bismuth, opium, various enemas, bolus alba, or calomel. The author is inclined to ascribe the diarrhoea to the coccidiosis.

W. J. Bais.

Westphal (Karl) & Georgi. **Ueber die Beziehungen der *Lamblia intestinalis* zu Erkrankungen der Gallenwege und Leber.** [The Role of *L. intestinalis* in Affections of the Bile Ducts and Liver.]—*Muench. Med. Woch.* 1923. Aug. 17. Vol. 70. No. 33. pp. 1080–1084. With 3 figs. [10 refs.]

The flagellate *Lamblia intestinalis* inhabits the small gut. It was discovered in the duodenal juice as well as in the faeces of the same patient by Dr. J. Rothmann, who found it quite commonly in these situations in Germany. According to his observations its presence is associated with simple jaundice. Cases of this nature are cited. The occurrence of the flagellates is accompanied by spasmodic pains in the hypogastrium, especially over the gall bladder, resembling those of cholecystitis.

In a case recorded, that of a young woman who for a long time had suffered from these symptoms with tachycardia, etc., the gall bladder was removed and the organisms were found in numbers in its contents. As a control the duodenal juice obtained by aspiration was examined in 30 normal individuals, with a negative result.

The author regards Lamblia as mildly pathogenic, and believes that it can be to a certain extent killed off by the addition of 1–1000 solution of trypaflavine to the duodenal juice. Methylene blue solution, ·3 per cent., was introduced in doses of 200 cc., three times daily, into the duodenum. A definite diminution in the parasites in the stools took place.

P. H. M-B.

KHALIL (M.) & SHAWKY (I.). **Lamblial Dysentery treated with Carbon Tetrachloride.**—*Jl. Trop. Med. & Hyg.* 1923. Sept. 15. Vol. 26. No. 18. p. 285.

Lamblia intestinalis was the only pathogenic agent discovered in three cases of dysentery in Egypt. In the absence of any specific treatment for this infection, it was thought advisable to try the effect of carbon tetrachloride. To children the drug was given in 20 minim doses in water, followed in two hours by a purge of magnesium sulphate; to an adult 5 cc. was given. The parasites disappeared, but it is to be noted that the cases were not kept under observation longer than three weeks; nevertheless the author considers that the immediate relief of symptoms, together with the disappearance of the organism, warrants a more extensive trial of this method.

P. H. M-B.

LOPES (Renato de Souza). **Ensaio do tratamento da trichomonose intestinal pelo yatren.** [Yatren in the Treatment of *Trichomonas hominis*.]—*Brazil Medico.* 1923. July 14. Year 37. Vol. 2. No. 2. pp. 23–24.

The author affirms that *Trichomonas intestinalis* [*hominis*] is pathogenic in direct proportion to the numbers present. In some cases, after all the usual drugs had failed, Yatren was tried and yielded unexpectedly favourable results. It was given in doses of 1 gm. in capsule thrice daily for 10 days and, if the faeces still contained the parasite, the course was repeated in a fortnight. Intestinal lavage with iodine (iodine 5 gm., potassium iodide 10 gm., aq. dist. 150 gm., made up to a litre for injection) is recommended to be employed at the same time, and, if there is much intestinal irritation, the following is given in capsules three times a day: bismuth salicylate 50 cgm., tannigen 20 cgm., Dover's powder 20 cgm., powdered belladonna 3 cgm.

Brief details are given of two cases; in both when examined for Trichomonas after the second course the faeces were negative.

H. Harold Scott.

OHI (Tsukasa). **Investigation of Balantidium Colitis in Formosa.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa.*) 1923. July. No. 229. pp. 19 20. In Japanese pp. 63–86. With 1 plate.)

Two cases of colitis due to *Balantidium coli* are described from South Formosa. Both patients suffered from irregular diarrhoea, anorexia, and thirst. On sigmoidoscopy ulcers were seen in the rectum usually about the size of a pea. Experiments made with a view to infect guineapigs, rabbits, dogs and monkeys failed, while similar trials with young pigs were successful. More than 60 per cent. of the indigenous pigs of South Formosa are infected with this parasite, and in the author's opinion present a sickly appearance as compared with normal animals. Outside the body the parasites live best in ascitic fluid, and can exist for two hours in normal saline solution.

P. H. M-B.

Greene (J. L.) & Scully (F. J.). **Diet in the Treatment of** *Balantidium coli* **Infection.**—*Jl. Amer. Med. Assoc.* 1923. July 28. Vol. 81. No. 4. pp. 291–293. [31 refs.]

Until recently therapeutic measures in Balantidium infection consisted mainly in the use of drugs by mouth and by enemata. Apparently no single drug is sufficient: calomel, phenyl salicylate, ipeacuanha, emetine and thymol have been tried by the mouth with various results, while local treatment by enemata of protargol, salicylates, tannic acid, and quinine, have given no better results. Only a few writers mention diet; it has usually been considered as of secondary importance, but the authors consider it the essential factor. Their routine is very simple: the patient is given 2½ quarts of milk during the day, in small portions at regular intervals, supplemented later by eggs. The only drug used is bismuth subnitrate in 15 grain doses in order to relieve the cramps and to check the diarrhoea; later, stewed fruit is given. The cases they quote, four in number, responded very promptly to this plan. There was a rapid improvement in the general condition which is ascribed to the freedom from pain with its interference with rest and sleep, and to relief from the exhaustion of loss of fluid from the body. The cramps and tenesmus soon ceased and the parasites disappeared from the stools, in one case in 20 days, and in a second in 8, and were never found again.

P. H. M-B.

i. Aiya (Tomogoro). [**On the Relation between Distension of the Scrotum and the Prognosis of Diseases, with Special Reference to Ekiri and Infantile Dysentery.**]—*Tokyo Iji Shinshi* (*Tokyo Med. News*). 1923. Feb. No. 2315. [Summarized in *Japan Med. World.* Tokyo. 1923. July 15. Vol. 3. No. 7. p. 165.]

ii. Hefferman (L. W.). **A Case of Ingestion of Hair by an Infant, with Symptoms simulating Dysentery.**—*Indian Med. Gaz.* 1923. Oct. Vol. 58. No. 10. p. 488.

i. The author thinks that in Ekiri and infantile dysentery the shrivelled up condition of the scrotum indicates a serious prognosis, but a smooth one often the opposite.

ii. A baby aged four months suffered from dysenteric symptoms and on the third day passed a hair seven inches long, which was recognised as belonging to one of the family; after this recovery was uneventful.

P. H. M-B.

SPRUE.

Scott (H. Harold). **The Treatment of Sprue based on a New Theory of Causation.**—*Lancet.* 1923. Oct. 20. pp. 876–878. [4 refs.]

In this paper Scott gives details of cases treated according to his new method (see this *Bulletin*, Vol. 20, p. 733). Progress of four cases is cited in detail, while there are six others equally favourable of which particulars are not given. The average stay in hospital has been 5–6 weeks. The theory previously recorded, upon which this treatment is based, postulates that endocrine disturbance and alimentary toxaemia are frequently associated, while all acute and chronic toxaemia reacts in some degree upon the parathyroid glands, causing disturbance of calcium metabolism and a consequent decrease in tissue resistance. In the normal faeces the ratio of neutral fat to fatty acids is 1 : 2. In cases of pancreatic disease this proportion is reversed and may be as high as 15 : 1. In sprue the proportion is found to be 1 : 3, and in a grave case 1 : 9.

It has been observed that some cases of sprue do not do well on pancreatized food, that in cases of hyperchlorydria symptoms of the disease may reappear and can only be abolished by going back to milk. Again it has been shown that internal secretion of the pancreas reacts upon other endocrine glands and on the salivary glands. It is suggested that the sore condition of the mouth and tongue may be due to altered salivary secretion. These facts are taken to show that there is an over-stimulation of the pancreas.

As regards the evidence of error in calcium metabolism the decrease of this substance may be of two types. It may be absolute, when the total amount in the serum is lessened, or it may be relative, when the total is unchanged. In either case the effect upon the somatic cells is the same, they suffer from a deficiency of calcium. The "ionic" calcium of the blood becomes deficient in cases where chronic toxaemia is present. The symptoms such as tetany, cramps, oedema, loss of weight, excess of calcium salts of the faeces, and the ulceration of the intestinal canal, may all be ascribed to deficiency of calcium. When calcium is administered in sprue the increase makes up temporarily for the deficiency, and symptoms improved, but this improvement was transient only, and it was found that the dose had to be increased. The regulation of calcium absorption can be controlled by the administration of parathyroid. The alimentary toxaemia is shewn by acidity, flatulence and secondary anaemia. The various forms of treatment now in vogue are reviewed ; it is pointed out that none of them rests on any scientific basis.

Milk acts as a non-irritating food, allows the ulcers to heal and is a good method of administering calcium. As regards the geographical distribution it is suggested that possibly sprue may occur in Europe, but no explanation is forthcoming of the apparent absence of the disease from Central Africa.

Finally the author suggests that there are two distinct classes of sprue. Those arising in India and the East are associated with an excess of proteid diet and hyperchlorydria. These are the patients who complain of a recurrence of symptoms when given pancreatized food. Other cases develop symptoms while on a fatty diet with

organic hyperacidity and hypochlorydria. Both do well on calcium treatment. The latter are able to take pancreatized food. Overstimulation of the pancreas is probably the result of excessive production of secretin.

P. H. Manson-Bahr.

Cousland (Philip B.). **The Treatment of Sprue.** [Correspondence.] —*China Med. Jl.* 1923. July. Vol. 37. No. 7. pp. 622–623.

A letter dealing with the results of the Calcium lactate and parathyroid treatment of Dr. H. Harold Scott; it outlines also the therapeutical considerations on which it is based. The dramatic improvement which took place in Scott himself as a result of this treatment, even when all dietary restrictions were disregarded, is described, and he is said to be just as keen a "demon for work" as formerly.

A second case is mentioned of a missionary from South China who was dissuaded from returning to the East on account of the possible danger of recurrence. After a few days of Scott's treatment he is said to have eaten fat pork for lunch in large, thick slabs, followed by boiled roly-poly pudding, without any disagreeable consequences.

P. H. M-B.

Jamieson (T. H.). **The Treatment of Sprue.**—*Brit. Med. Jl.* 1923. Sept. 15. p. 462.

The clinical resemblance between coeliac disease and sprue has already been noted by several observers. It was therefore determined to treat 3 sprue cases on the fat-free diet used in coeliac disease. This diet is as follows:—

5 a.m.	Cup of weak tea, one round of dry toast.
8 a.m.	1 oz. of casein, 1 pt. skimmed milk, ½ pt. tea without sugar, four rounds of dry toast, 1 oz. of cheese.
11 a.m.	½ pt. of skimmed milk, ½ oz. of casein.
11.30 a.m.	Juice of one orange.
12 noon	1 pt. liver soup, 2 ozs. minced chicken, 2 rounds of dry toast, 4 ozs. of junket, 4 ozs. of calf's foot jelly. (The junket should be made with skimmed milk.)
4 p.m.	1 oz. of casein, 1 pt. of skimmed milk, ½ pt. weak tea, without sugar, 1 oz. of cheese, 2 cream crackers.
8 p.m.	1 pt. skimmed milk, 1 oz. casein, 4 ozs. of junket, 4 ozs. of calf's foot jelly.
10 p.m.	Juice of one orange.

Three cases recorded have all done well, in one instance increasing from 7 st. 3 lb. to 12 st. 2 lb. in weight.

P. H. M-B.

Silverman (Daniel N.) & Denis (Willy). **Tropical Sprue and its Relationship to Disturbances of Pancreatic Digestion.**—*Southern Med. Jl.* 1923. July. Vol. 16. No. 7. pp. 503–506. [10 refs.]

The results of enzymic activity of the duodenal contents in a typical case of sprue before and during clinical improvement are here recorded.

Attempts at testing the faeces for ferments should be discouraged, since this method of analysis is cumbersome and inaccurate. Recent investigations show that lipase-tests are constant for duodenal contents, but this ferment is not demonstrable in the faeces.

In the present case the fasting duodenal contents had an H-ion concentration of 7·2. The enzymic activities were as follows :—

1. Lipolytic activity 0·5 cc. (Expressed in cc. N/10 NaOH.)
2. Amylolytic activity 0·6 mg. (Expressed in mgm. of glucose.)
3. Proteolytic activity 0·9 mg. (Expressed in mgm. non-protein nitrogen.)

On placing the patient on a meat and milk diet together with pancreatin and calcium lactate immediate improvement took place; the duodenal contents were then re-examined for their respective ferments with the result that the quantitive enzymes were :—

Lipolytic activity 2·7 cc.
Proteolytic activity 1·3 mgm.
Amylolytic activity 1·6 mgm.

The amount of lipase found in this analysis represents approximately four times its strength in the first examination. These facts encourage the belief that in sprue the pancreas does not always undergo extensive or permanent damage.

P. H. M-B.

Scott (H. Harold). **A New Theory as to the Causation of Sprue and the Results of Treatment based thereon.**—*China Med. Jl.* 1923. July. Vol. 37. No. 7. pp. 581–584. [1 ref.]
[See this *Bulletin*. Vol. 20. p. 733.]

SLEEPING SICKNESS.

DUKE (H. Lyndhurst). **Further Inquiries into the Zoological Status of the Polymorphic Mammalian Trypanosomes of Africa, and the Means by which they are spread in Nature.**—*Parasitology.* 1923. Sept. Vol. 15. No 3. pp. 258–295. [30 refs.]

The first portion of this paper relates to the effect of continued direct transmission on a strain of polymorphic trypanosomes originally recovered from wild lake-shore *G. palpalis* in Victoria Nyanza. The earlier stages of the experiments have already been published [this *Bulletin*, Vol. 19, p. 123]. The strain was one of the gut-and-gland group of organisms derived from *G. palpalis* and was recovered in January, 1920, in Monkey 43 upon which the flies were originally fed; the duration of the disease in the monkey was 63 days. From this monkey a second Monkey 59 was infected by cyclical passage through laboratory-bred flies. Starting from Monkey 59 a series of passages by direct transmission was carried out as shown in a table. To effect the earlier passages clean laboratory-bred *G. palpalis* were used, infection being secured by interrupted feedings; the method proved tedious and at the eleventh passage was given up for that of inoculation of a small quantity of citrated blood. The strain began to increase in virulence at the 15th passage and after the 35th passage it was found necessary to introduce a guinea-pig into the series as monkeys were not available; the experiment was continued to the 42nd passage when, unavoidably, the strain was lost; the same species of monkey, a greenish-grey *Cercopithecus*, was used throughout. A considerable number of attempts were made to obtain cyclical transmission by means of laboratory-bred *G. palpalis* with the later passages (34th onwards) of the direct transmission strain. Details are given in a couple of tables and the results show that *in not a single one of the flies used in these experiments were any flagellates found.* It is evident, therefore, that the strain had completely lost the power of developing cyclically in the Glossina from which it was originally recovered. At what stage in the series this power was lost it is impossible to state, the last positive transmission experiment being at the 11th passage.

Similar experiments were performed with a strain obtained from an antelope shot in Damba Island in September 1920; this strain is still being maintained by direct passage, but has not yet shown any strikingly enhanced virulence. As is shown in a table the strain had undergone 29 passages between September 1920, and November 1922. A series of transmission experiments were performed with laboratory-bred *G. palpalis* at the last passages (28th and 29th); as is shown in a table 2·2 per cent. of the flies were found to contain flagellates, but in no case were flagellates found in the salivary glands and all the transmission experiments were negative. In previous experiments carried out between October 5, 1920, and January 26, 1921, the percentage of infective flies was ·68, and consequently it is clear that an important change had occurred in the strain between January, 1921, and November, 1922. The percentage of positive flies is about the same, but that of infective flies is nil. It is to be noted that both strains retained their polymorphism throughout the experiments. With reference to these experiments the author writes:—

"If a conclusion is justifiable from the limited evidence set forth in Part I it is that continued upkeep by direct transmission leads first of all to the loss by the trypanosome of the power of invading the salivary

glands, and this is followed later, in the history of the strain, by the complete loss of the power to develop in any part of the alimentary canal of the insect. Further, I think that the evidence we have before us tends to support the view that the cyclical development of the trypanosome in the fly is not a sexual process. . . .

" Applying these results to the spread of trypanosomes in human communities, we should expect direct transmission to function for a time without producing any noticeable effect on the strain so transmitted. Sooner or later, if conditions were favourable, the virulence of the parasite would increase, and direct transmissions would, in consequence, become increasingly frequent.

" As the virulence increased the trypanosome would lose its power of cyclical development in the tsetse, until it came to rely, for its transmission from man to man, entirely on the direct method.

" In such circumstances the epidemic would continue for just so long as the conditions admitted of spread by the direct method. When this became no longer possible the strain would presumably die out.

" Probably, in actual life, the enhancement of the virulence of a strain of human trypanosomes only occurs where the contact between fly and man is very intimate, and the passage of the parasite from host to host, in consequence, very rapid."

The second portion of the paper is an attempt to discuss the trypanosomiasis problem in the light of the theories put forward in two previous papers [this *Bulletin*, Vol. 15, p. 377, and Vol. 19, p. 123]. The author points out that the polymorphic mammalian trypanosomes whose development in Glossina has been worked out are by general consent divided into two categories each comprising several so-called species, viz.: *T. gambiense* with *T. nigeriense*, *T. multiforme*, BALFOUR'S trypanosome from a mule in the Sudan, and the trypanosome isolated from domestic animals in Principe on the one hand, and on the other hand *T. brucei* with *T. rhodesiense* and a number of organisms isolated by various people from game and stock in different parts of Africa. The two categories are generally differentiated from one another by differences in virulence and by the presence or absence of " posterior-nuclear " forms.

Discussing the question of " posterior-nuclear " forms, Duke believes that their occurrence is intimately connected with virulence and that it is unjustifiable and misleading to endow this character with specific value. The author next considers the significance of virulence in the classification of trypanosomes and concludes that it is unreliable. The essential characters upon which classification of the mammalian trypanosomes should be based are morphology and behaviour in the normal insect intermediary.

In contrast to stock, man is for all practical purposes absolutely immune to the " proboscis-only " and the " proboscis-and-gut " groups of trypanosomes, and the rarity of human trypanosomiasis in the huge areas in which man and the game-tsetses come into contact shows conclusively that he is also extremely resistant to *T. brucei*. The author believes that for many centuries man has played a considerable part as a host, in *palpalis* areas, both to the polymorphic trypanosome and to the fly; this entails the existence of a state of equilibrium between man and the trypanosome in its cyclically transmitted form. On the other hand, in *morsitans* and *pallidipes* areas, man has been relatively refractory to trypanosomes carried cyclically by the fly.

The opening up of Tropical Africa during the last few decades has had far-reaching effects; traffic channels have been developed everywhere and the advance of civilization has dealt a heavy blow to the

big game ; almost everywhere its range has contracted and its number diminished with the result that the fly has been compelled to turn its attention seriously to man as a food animal. The common result of scarcity of game is a concentration of Glossina along the traffic routes and around the villages in the belt. The change affects man in two ways : he is deprived of a source of food and he receives the undivided attention of the fly, with the result that the natives are subjected with increasing frequency to an ordeal which, under normal conditions, their forefathers withstood for ages—namely the introduction into their blood of a copious dose of the salivary-gland forms of *T. brucei*. The chances of the trypanosome obtaining a footing will be still further increased by any influence which debilitates the population and Duke believes that this is the manner in which *T. brucei* establishes itself in man.

After summarizing the reasons for believing that *T. rhodesiense* and *T. brucei* are identical, Duke continues to consider the spread of *T. brucei* in man. Reference is made to TAUTE's experiments [this *Bulletin*, Vol. 2, p. 348, and Vol. 15, p. 35] and to the fact that the author and a native were bitten by a gut-and-gland infected *G. swynnertoni* without developing trypanosomiasis [*loc. cit.*, Vol. 20, p. 309] as evidence that the *brucei* organism, when carried cyclically by the fly, cannot infect man. Duke believes that the reviewer was substantially correct when he stated his opinion that the same negative result would have followed had TAUTE used flies cyclically infected from a human case of *T. rhodesiense**, but he considers the reviewer's explanation that the great majority of the human race is naturally immune to *T. brucei* to be inadequate. He doubts whether it is reasonable to suppose that any person constitutionally susceptible to the ordinary *T. brucei* present in the game and fly could reach puberty without succumbing to his handicap. Yet in Nyasaland the great majority of the cases are adults. Some other explanation of the occurrence of the disease in Nyasaland and Rhodesia is necessary.

" A negative result, in the circumstances supposed by Yorke, need not necessarily be due to the natural immunity of the individual towards all strains of *T. brucei* ; it would be equally explicable on the supposition that the power of survival in man was so feebly implanted in the particular strain of trypanosome under investigation that this power was eliminated during the cyclical development of the organism in the tsetse. In other words Taute's experimental natives, if bitten by a fly carrying another strain of *T. brucei*, might have become infected ; whereas, if Yorke's explanation is correct, these particular persons are absolutely safe from all cyclically carried strains, be they *T. brucei* or *T. rhodesiense*.

" It is possible, therefore, to explain the sporadic cases of human trypanosomiasis found in Nyasaland and Rhodesia by assuming that some of the wild-fly strains of *T. brucei* can infect man, while others—forming the great majority—cannot."

Duke believes that doubtless the constitution and health of an individual will at times play a part in deciding whether he will become infected or not and that ankylostomiasis may serve as an important ally of the trypanosome. In Nyasaland and Rhodesia there are, apparently, human strains of *T. brucei* carried by wild *G. morsitans*, but how these strains acquired the power to infect man it is impossible to say ; they are, the author considers, of recent appearance.

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* *Trans. Roy. Soc. Trop. Med. & Hyg.* 1920. Vol. XIV, p. 31.

The only instance of *T. rhodesiense* in an epidemic form recorded is the outbreak near Mwanza and here the history and distribution of the disease point to direct transmission as the principal means by which the trypanosome passed from man to man [this *Bulletin*, Vol. 20, p. 309 and p. 311]. As has already been shown in the earlier part of this paper increased virulence, acquired in the course of prolonged upkeep by direct transmission, may eventually be accompanied by the loss of power to develop in the fly, and when the epidemic has reduced the population to the limit below which direct transmission can function on a large scale the outbreak dies out. In answer to the question what happens to the trypanosome when the epidemic works itself out, the author writes as follows :—

"During the earlier stages of an epidemic the parasite must frequently be exposed to chances of cyclical development in the fly, and doubtless most of these early strains are successful. The probable result of cyclical passage through the insect at this stage will be the loss of the newly acquired power of survival in man. But, as the epidemic progresses, and especially if the disease is not very virulent, it is possible that this power to survive in man may become so firmly rooted in the strain that it can survive the test of cyclical transmission by the tsetse. In this way a cyclically transmitted human strain may be established in wild fly.

"The future career of the trypanosome as a human parasite probably depends on the extent to which game is available to the fly."

The next section deals with the proboscis-and-gut group of trypanosomes and its analogy to the gut-and-gland group; and the following one with man's relation to the polymorphic trypanosomes of *palpalis* regions. It is a remarkable fact that practically wherever man and *G. palpalis* have been in age-long contact, human trypanosomiasis is found in some form or other. The French in the Congo recognize two types of the disease in *palpalis* areas—a mild endemic form, and an epidemic form, which is much more virulent and at times causes an appalling mortality; epidemic outbursts may occur in an endemic area and after such an outburst the disease may once again assume its milder endemic form. CLAPIER has shown that where the disease is endemic the young of both sexes show the greatest proportion of infects and suspects, but in epidemic areas young and old are attacked equally (this *Bulletin*, Vol. 19, p. 124). The explanation given is that in endemic areas almost everybody is infected in the days of his youth, but that with increasing years, a labile immunity is acquired; in its epidemic form there is no immunity. With reference to the assertion of the French that mosquitoes play an important part in the spread of the disease Duke states that his observations have convinced him that tsetses are much more prone to flit from host to host in their efforts to feed than are mosquitoes and that the structure of their proboscis makes them more suited to direct transmission. CLAPIER's record [*loc. cit.*] that in an epidemic area trypanosomes are commonly present in the peripheral blood is significant in this connexion and shows that the disease in its epidemic form presents one of the features essential to direct transmission. "In *palpalis* regions we must, therefore, recognize the existence of *two types of trypanosomiasis due to the gut-and-gland group: a mild cyclically-transmitted endemic form, and a virulent epidemic type that relies mainly on direct transmission for its spread.*"

With regard to *T. gambiense* and *T. brucei* :—

These trypanosomes "manifest identical morphology in man and in monkeys and in stock, and they behave in the same way in the insect

intermediary. Their distribution coincides roughly with that of *G. palpalis* in the one case and the game-tsetses in the other, and their principal mammalian hosts are, respectively, man and game. Differences in environment are amply sufficient to account for such differences as exist between the two trypanosomes.

" I feel confident that epidemic strains of *T. gambiense* will be found in *palpalis* areas in the Congo, and that these, under suitable handling, will yield posterior-nuclear forms."

The last section deals with the big game as a reservoir for trypanosomes, especially for those of men. The author summarizes his views on this subject as follows :—

" The game, in game-tsetse areas, is the main natural reservoir of the proboscis-and-gut and proboscis-only groups of trypanosomes ; but in as much as we must assume that man, under exceptional circumstances, can be infected by wild flies cyclically carrying the gland-and-gut group, the game is also a reservoir, in game-tsetse areas, of the human parasite known as " *T. rhodesiense.*"

" In *palpalis* areas man is the main reservoir for the trypanosome known as *T. gambiense.* In game-tsetse regions man is probably a more important reservoir than the game for human strains of this group of trypanosomes, because direct transmission (from sporadic human cases infected by the cyclical route) may cause an epidemic outburst in a human community. It is also possible that there is, in the process of adaptation to man of the *brucei* form of trypanosome, a stage at which cyclical transmission from man to man occurs.

" But in both types of fly area, and particularly in game-tsetse areas, the game acts as a shock-absorber in regard to man ; and this beneficial protective action probably considerably outweighs its power for harm as a reservoir. The presence of the game simultaneously diverts the attention of the tsetse from man, and leads to the suppression in the trypanosome of the potential quality of survival in man.

" The practical outcome of these conclusions is that *we should concentrate our attack directly on the fly,* which we know to be an indispensable factor in the spread of human trypanosomiasis."

[Even in a somewhat long summary it is difficult to do full justice to this thoughtful and stimulating paper. Although the reviewer cordially agrees with most of the author's arguments and contentions, certain of the conclusions appear to be open to criticism. A discussion of the various points is, however, impossible here and the reviewer has limited himself to giving in the space available as clear a statement as possible of the author's views. The paper should be studied carefully by all interested in the epidemiology of sleeping sickness.]

W. Yorke.

MARTIN (Gustave). **Distribution géographique et prophylaxie de la maladie du sommeil dans les Colonies françaises d'Afrique.**— *Congrès de la Santé Publique et de la Prévoyance Sociale, Marseille, 11–17 Septembre, 1922. Rapports.* pp. 314–351. [60 refs.]

The author gives an interesting general summary of the distribution of sleeping sickness in the French African Colonies and of the results of measures devised to deal with the situation.

He writes that the prophylactic service has in 1921 accomplished a great deal, as is evidenced by the report of the principal medical

officer, Boyé [this *Bulletin*, Vol. 20, p. 314]. In the 10 divisions of which five functioned during the entire year 1921 and five during a part of it, 559,658 natives have been examined. Among these were 18,800 cases of sleeping sickness previously discovered in four of the divisions and 9,789 new cases, making a total of 28,589 cases, *i.e.*, about 5·18 per cent. of the persons examined. All these cases have been given atoxyl two to five times and some of them more frequently. To these figures must be added 7,061 cases discovered in the Cameroons, making a totalof 35,650 cases regularlyunder supervision and treatment.

The atoxylization has had excellent immediate results; besides its sterilizing action thus diminishing the number of carriers of the virus, it has equally influenced the general health of the infected, and seems also to have had a good effect on the birth-rate. In most of the divisions the number of new cases contaminated is insignificant. In the subdivision of Marali the number has, according to Huot, diminished by 45 per cent. and in that of Fort-Crampel by 43 per cent.

Jamot recorded that during the year preceding the operations of the service, 2,071 persons died of sleeping sickness in Oubanghi-Chari, whereas in the following year as the result of treatment by atoxyl alone or by this associated with novarsenobenzol, the deaths fell to 714, *i.e.*, a decrease of 65 per cent. All the epidemic areas dealt with —and some of them were of extreme violence—were got under control; and the mass of virus in the circulation was lessened by 80 per cent.

In the Bas-Oubanghi more than six years after an energetic prophylactic campaign which was, however, prematurely interrupted, Clapier re-examined a third of the recorded cases, and in 80 per cent. it was no longer possible to find trypanosomes. In the Ibenga-Motaba division, of the 1,072 cases discovered in 1914, 373 were found on January 1, 1921, and 341 on January 31, 1921; most of these were in good condition and did not exhibit trypanosomes in the circulation.

The author concludes that the campaign against sleeping sickness undertaken in French Equatorial Africa and in the Cameroons must be carried on with continuity and perseverance. Only by frequent search for recent cases and by the administration of immediate and methodical treatment is it possible to obtain good results. New prophylactic services must be started; the segregation camps are too few and must be multiplied. Vigorous and strong action should be taken simultaneously in heavily infested regions and also in those which up to the present have been relatively spared. In French Equatorial Africa the minimum annual expenditure necessary for the functioning of 15 divisions is a million francs.

W. Y.

Huot. **La prophylaxie de la maladie du sommeil dans la région de Doumé (Territoires du Cameroun), octobre 1920–juin 1922.**— *Ann. de Méd. et de Pharm. Colon.* Paris. 1923. Jan.–Feb.–Mar.–Apr. Vol. 21. No. 1. pp. 5–42. With 1 sketch map in text.

Reference to the German records indicates that no very active focus of trypanosomiasis existed to the North of Doumé before 1914. In the course of 1918–19, Peyronnet found fairly numerous cases in the villages of M'Vangs and in 1920, Jojot found 182 cases among 3,042 persons examined in the Akonolinga-Doumé district. The author on his arrival at Doumé in October, 1920, found considerable

foci of the disease in North Doumé which had not been suspected by the administration.

The second portion of the report is concerned with an account of the country and its population and of the distribution of the tsetse. Practically the only domestic animals found apart from fowls and ducks are a few goats.

The next section deals with the organization of the medical service and of the methods of examination and treatment. In a table details are given of the number of men, women and children examined in various villages and groups of villages and the number of each found to be infected ; of a population of 35,322 persons, 10,661 men, 6,869 women and 9,600 children were examined and 1,219 men, 713 women and 697 children were found to be infected. The two endemic foci on the upper Doumé and on the upper Sanaga appear to have extended and finally fused in the region of the forest of Deng-Deng. Very grave epidemics have resulted in the last few years and these have been aided by the lowered resistance of the population which has for a long time been living in unhealthy camps in the bush and has suffered from insufficient food. The savannah districts to the East and West of the forest have remained almost free.

A detailed account is given of the results—prophylactic and curative—of various methods of treatment. The results obtained by treating 284 cases at Doumé by weekly doses of 0·5 gm. atoxyl are summarized in a table. Blood examinations made during treatment in patients who had received a course of 10 to 20 weekly injections resulted in the finding of trypanosomes 26 times in 256 examinations. In patients who had improved and whose blood had been found negative, a further examination made three to four months after cessation of treatment showed that the sterilization had been maintained in 90 per cent. of cases. Several cases, however, where clinical conditions had greatly improved showed trypanosomes in the blood and latterly all such cases were given two injections of 0·6 gm. of neosalvarsan separated by four weekly injections of atoxyl ; the result of this appeared satisfactory. Of the 284 cases treated 15 died during the period of 19 months—4 who were at the time of treatment in advanced condition, 2 from accidents, 5 from intercurrent infections and 4 who had not undergone regular treatment. Of 191 cases treated at least a year 111 (58 per cent.) who had received 2 or 3 series of 20 injections of atoxyl appear to be cured. The initial dose of the drug was 1 gm., the remaining doses were 0·5 gm.

The next method of treatment referred to is that of injection of massive doses at intervals of a month or more. The cases coming from heavily infected regions, districts of advancing epidemics and zones of moderate endemicity are considered separately. This method gave good results from the point of view of reduction in the mass of the virus ; the coefficients of sterilization varied from 85 to 90 per cent. This work has been carried out under most unfavourable conditions owing to the extremely primitive mentality of the natives and their tendency to shift about from place to place and to disperse to encampments situated in most unhealthy localities ; nevertheless, the last tour through the most severely affected regions has shewn a striking change in the appearance of the population, and the natives themselves appreciate the improvement. The last section of the report deals with the administrative measures.

W. Y.

CARPENTER (G. D. Hale). **Report of Senior Medical Officer i/c Sleeping Sickness for 1922.**—*Uganda Protectorate Ann. Med. & San. Rep. for the Year ended 31st December, 1922.* pp. 58–60.

Early in 1922, the author visited the districts of Gulu and Chua. The situation in Gulu is much the same as in Madi ; with the exception of the R. Toshi and its tributaries all the streams are fly-infested and the suppression of sleeping sickness depends upon the enforcement by the administration of adequate clearing of crossings over streams and of watering places. In Chua there is no indigenous sleeping sickness but many of the rivers are infested with *G. palpalis* which seems as yet not to be infected. A total of 3,351 men, 3,066 women and 3,141 children were examined and only three cases found, and these had come over from Gulu. The danger to Chua appears to lie in traffic from Gulu, and administrative means are to be taken to control this.

In August the Katwe area was visited in order to arrive at a satisfactory decision regarding the closed area of the Kigezi district and as a result it was decided to open two large parts of the closed area giving ample opportunity for safely conducting the fishing industry. The author then proceeded to Kazinga where Dr. MARSHALL had reported in August, 1920, that nearly 18 per cent. of the population were infected and had recommended the destruction of the village. It was found that with an increase of 58 per cent. of the population there were no cases at all of sleeping sickness ; the clearings had been maintained satisfactorily and it was agreed to extend the area permitted. The state of affairs at Katwe was equally satisfactory ; MARSHALL had reported in 1920 that probably over 15 per cent. were infected, but in October, 1922, Carpenter, who examined the whole population of 267 men and 134 women and children, found only one man and one woman infected and these had without doubt been infected on the upper reaches of the Nyamagasani river which comes down to Katwe. All was well at L. George where a ferry was opened a year ago and it was decided that more land west of the landing at Mahyoro should be taken up when properly cleared.

The situation in the Mpologoma area is a little uncertain, but that in Madi is more hopeful ; many of the author's previous recommendations have been put into force and much has been done.

W. Y.

LESSA (Gustavo). **A epidemiologia da molestia de Chagas.**—*Boletim Sanitario.* Rio de Janeiro. 1923. Aug. Vol. 2. No. 3. pp. 1–27. [43 refs.]

Seventeen species of Triatoma have been reported as existing in Brazil ; 11 of these are vectors of *Schizotrypanum cruzi*. Two species of Rhodnius and two ticks (*Rhipicephalus sanguineus* and *Amblyomma cayennense*) also harbour the parasite. Infected Reduviidae have been found in several districts, notably S. Paulo, Bahia, Lassance, Matto Grosso, Parnaguá and Goyaz.

Chagas' disease is of wide prevalence in the rural districts of Brazil and has also been reported from Venezuela and Peru. It probably exists in all parts where infected vectors are found. To prove this point it is suggested that research posts should be established in various parts of the interior.

Infection usually takes place in early life, and, in fact, may even be congenital. Of 28 acute cases in Lassance 25 were under two years

of age. In the young the course is often rapid and nearly half the cases terminate fatally.

As regards the connexion between Chagas' disease and enlargement of the thyroid the author states that myxoedema is a constant feature in acute cases and the domiciliary distribution of the Triatoma is the same as that of goitre, but it is not yet proved to what extent the relation is causal.

H. Harold Scott.

CROWELL (Bowman Corning). **The Acute Form of American Trypanosomiasis; Notes on its Pathology, with Autopsy Report and Observations on Trypanosomiasis cruzi in Animals.**—*Amer. Jl. Trop. Med.* 1923. Sept. Vol. 3. No. 5. pp. 425–454. With 10 text figs. [8 refs.]

This paper gives a detailed account of the morbid anatomy and histology of the tissues obtained from a fatal case of the acute form of Chagas' disease.

The following summary is given :—

"This trypanosome has been previously shown to possess morphologic and biologic characteristics which differentiate it from other trypanosomes. In its pathogenicity it also differs in some respects from the other trypanosomes, and this difference in large part depends upon the fact that it becomes a histoparasite and upon the types of cells that it infests. In trypanosomal diseases in general the changes produced are conceived as being due to the direct action of the parasites and to the toxins derived from them. In dealing with the action of the *T. cruzi* there also enters into consideration the actual destruction of fixed tissue cells (muscle fibres, etc.) caused by the multiplication of parasites within them to such an extent as to rupture the cells, and the sequent reaction to this destruction of tissue on the part of the wandering cells of the body.

"As regards the types of cells infested by the *T. cruzi* we are dealing with derivatives of the mesoderm (muscle, fat endothelium, suprarenal gland, ovary, uterus, testis, serous membranes), entoderm (thyroid, thymus, liver, etc.), and ectoderm (ganglion cells and glia (?) cells). In severe cases of acute infestations all of these tissues may be parasitized and it is then difficult to consider the parasite as having a special predilection for any one tissue. However, in less severe infestations and in cases that become chronic the parasite undoubtedly shows a definite predilection for certain tissue and among these the muscle tissue, especially cardiac, nerve tissue and endothelium are prominent.

"The trypanosome multiplies within these tissues even at a very early stage of the disease and soon (not usually later than the first month in human cases) disappears from the peripheral circulation. In spite of the fact that the organisms must reach the circulating blood again when freed by rupture of their host cells, they nevertheless disappear; this disappearance can best be explained by some constituent of the blood that is inimical to the life of the trypanosome."

W. Y.

REICHENOW (Eduard). **Untersuchungen ueber das Verhalten von *Trypanosoma gambiense* im menschlichen Körper.** [Investigations on the Behaviour of *T. gambiense* in the Human Body.]—*Ztschr. f. Hyg. u. Infektionskr.* 1921. Vol. 94. No. 2/3. pp. 266–385. With 2 coloured plates, 8 figs., and 20 graphs. [119 refs.]

The work upon which the paper is based was done between March 1913, and August 1914, at the sleeping sickness camp of Ajoshöhe on the upper Njong in the Cameroons. The paper is of considerable

length and portions of it deal with matter published elsewhere and already noticed in this *Bulletin* [Vol. 19, p. 127 and p. 128].

The first portion of the paper relates to the parasite as it appears in the blood. As the trypanosomes are, as a rule, so scanty in the peripheral blood the author used in his investigations the thick film method. He gives details regarding the preparation of thick films and points out that the reason why certain observers have obtained but poor results with them is that they have used too much blood and made their films too thick. *T. gambiense*, like other pathogenic trypanosomes, behaves in the blood in one of two ways: either the parasites increase in number from day to day until finally a maximum point is reached, or they disappear from the blood sooner or later to reappear again; finally, the host dies after the increase and disappearance has taken place a greater or smaller number of times. The appearance of this periodicity, the length of the periods, and the extent of the parasitic increase are very different according to the host and to the virulence of the trypanosome strain used. The author followed the variation in the number of parasites in the blood from day to day in a series of patients and the results are set forth in a table and a number of graphs. In the section dealing with the cause of the periodic disappearance of trypanosomes from the blood, the author, after referring to the many references in the literature bearing on the subject, writes that he has observed the process in numerous cases of human trypanosomiasis and that it is easily demonstrable that the flagellates die in the blood plasma without the intervention of the phagocytes; moreover, the process takes place not in any particular organ, but everywhere in the blood stream. A description is given of the dead and dying parasites, as they appear in fresh preparations and in stained films.

The author then refers to the fact that in *T. gambiense*, and also to a greater or less extent in all species of trypanosomes, the various individuals exhibit morphological differences. Reference is made to the different theories advanced to account for this polymorphism; as the result of his own observations Reichenow agrees with Oehler, who considers that these differences are to be correlated with varying degrees of virulence. The vast majority of long slender forms are found during periods of rapid increase in the number of parasites, while the short plump forms are to be observed shortly before the periodic disappearance of the parasites. The relative number of long and short forms is a criterion of the virulence of a strain; the weaker its virulence the greater the number of short forms.

The short forms must be present in the blood before it can infect Glossina (Minchin, 1908 and Muriel Robertson, 1912–13), as these forms exhibit most resistance to unfavourable conditions such as obtain during the first hours of change from human blood to the gut of the fly. Glossina are more easily infected from early cases of the disease; Reichenow never succeeded in infecting them from cases in an advanced stage, probably owing to the fact that flagellates are then only found in the blood in a state of great activity. It is also possible that after long sojourn in the blood of man or an experimental animal, the trypanosomes have undergone biological changes of such a character as to render even the short forms incapable of developing in the fly.

The next section deals with the trypanosomes in the cerebrospinal fluid. Details are given of the technique employed for estimating approximately the number of parasites per cc. of spinal fluid. Ten cubic centimetres of fluid are centrifuged for 10–15 minutes and the

bulk of the supernatant fluid removed; the tube is then shaken so as to mix the sediment with the remaining fluid and the whole withdrawn on to a slide and dried in the sun; by this means the trypanosomes collect in the outer edge of the drop, the cells being distributed all over the area. The films are stained with Giemsa and counted. The results obtained from 171 lumbar punctures in 97 cases are given in tabular form. This valuable table, which occupies 26 pages, gives information regarding the sex, age and general condition of the patient, the nervous symptoms, the previous treatment, the date trypanosomes were first seen, the date of lumbar puncture and condition of the blood at the time of this, and the state of the spinal fluid as regards pressure, cell content and trypanosomes.

Nothing is known of the manner in which the parasites enter the cerebrospinal fluid and very little regarding the period of the disease at which it occurs. Reichenow's observations lead him to believe that the cerebrospinal fluid does not become infected for at least three months after the beginning of the disease. He has never seen a case in which the spinal fluid remained free from parasites for longer than a year. The number of trypanosomes found in 10 cc. of the cerebrospinal fluid varied from 1 to 2,000; smaller numbers were more frequent than the larger. In one-third of the cases the number of parasites per 10 cc. of fluid was ten or less. The forms found in the spinal fluid always had a well developed flagellum; sometimes the parasites were more slender than any found in the blood, short forms were never seen, divisional forms were common. An account is given of the increase of the cellular contents of the spinal fluid and the morphology of the cells encountered. This part of the work has already been discussed elsewhere as has also the last section of the report contrasting the behaviour of *T. gambiense* and *Sp. pallida* as regards the central nervous system [*loc. cit.*].

W. Y.

Kleine (F. K.) & Fischer (W.). **2. Bericht ueber die Prüfung von "Bayer 205" in Afrika.** [Second Report on the Use of "Bayer 205" in Africa.]—*Deut. Med. Woch.* 1923. Aug. 10. Vol. 49. No. 32. pp. 1039–1041. [1 ref.]

In their previous report [this *Bulletin*, Vol. 20, p. 317], the authors showed that feeding infective Glossina on animals which had been treated with "Bayer 205" did not destroy the trypanosomes in the salivary glands. This line of work was continued in order to determine whether the drug had any influence on the developing parasites in the gut of the flies and the results showed that this was not the case.

It is recorded that the two oxen referred to in the first report which had received large doses of "Bayer 205" shortly before infected flies were fed on them have since showed trypanosomes in their blood. In order to confirm this failure of prophylactic action on the part of the drug, four other experiments were performed on cattle of which the following is an illustration:—Ox 9 received from April 24 to April 27 1922, daily injections of 2·5 gm. of "Bayer 205" subcutaneously. After 15 days—between May 5 and May 18—1,014 flies were fed on it; then on May 22 and May 23 it received further injections of 6 gm. of the drug. On June 21 10 cc. of its blood was injected into monkeys which became infected on June 30.

All four experiments gave similar results. In view of the possibility that the experimental infections were too massive, further observations

were made on the effect of driving a herd of 20 cattle, 16 of which were previously treated by an intravenous injection of 8 gm. of " Bayer 205 " through a heavily infested fly-belt (*G. morsitans* and *G. fusca*). The prophylactic injections were given on March 27 and the cattle entered the fly-belt on March 30. On April 6 and 16 further injections of 8 gm. of the drug were given and on April 25 a further injection of 4 gm. On April 17 the animals were removed from the fly-belt. The controls were found to be infected as early as April 12, on which date all the treated animals were free. On May 7, however, 9 of the 16 treated animals were found to be infected. On May 18, 2 were still free, 6 had lost their parasites and in the remaining 8 they were present in small numbers only: all were in good condition. The trypanosomes concerned were *T. brucei*, *T. vivax* and *T. congolense*.

The authors intend to return later to the subject of the therapeutic value of " Bayer 205 " for infected cattle. In cattle the trypanosomes readily become " Bayer 205 " fast. The susceptibility of the parasites to a drug is in the first degree dependent on the species of animals used and varies with this.

The next section of the report deals with the treatment of sleeping sickness in Rhodesia. Of the six cases referred to in the earlier report, one (the European) relapsed, and died in London [this *Bulletin*, Vol. 20, p. 323]. In June, 1922, the authors treated a further 30 cases, 16 of whom were very ill. The patients were given subcutaneously 3 to 5 injections (according to their condition) each of 1·2 gm. of the drug: the interval between the first and second injection was 10 days and that between the second and third 18 days. One of the patients, an elderly woman, died of pneumonia soon after her arrival at the camp and a middle-aged man died suddenly from unknown cause after the further injection. The remaining patients showed distinct improvement after a few weeks. In all except 2 cases the blood was negative. In October lumbar punctures were made on 21 of the cases (10 formerly very ill, 6 moderately ill and 5 mild cases) and trypanosomes were found in the cerebrospinal fluid of 8 of them. Whether these parasites were in the process of disappearing or whether they indicated a recrudescence of the infection is as yet unknown. They were found in persons who exhibited severe nervous symptoms before treatment; these symptoms had disappeared, six of the patients with parasites in the cerebrospinal fluid looked extremely well and were capable of hard work. Probably the drug is not without influence on the trypanosomes in the brain and even in those situations in the human body where the parasites are not killed they undergo an extraordinary diminution in virulence. At the beginning of November, 1922, the patients were discharged, although some of them were not cured. On April 13, 1923, the Native Commissioner at Lundazi reported that three of them had died; two of these were on the authors' list as dangerously ill and the third died apparently from an abdominal tumour which was noted when the patient was in camp. All the remaining cases are reported to be alive and in good health.

The final section deals with sleeping sickness in the Congo. Diagnosis was made by finding the trypanosomes. Of 32 cases, 24 had trypanosomes in the glands and blood, 4 in the glands only and 4 in the blood only. Lumbar punctures were made in 24 patients, none of whom exhibited nervous signs, and in these the fluid was normal. In all cases with nervous symptoms the spinal fluid contained an excess of lymphocytes even when trypanosomes were not found. As a rule,

intravenous injections of 1 gm. of "Bayer 205" in 10 cc. of sterile rain water were given on the first, third and thirteenth days; children were given 0·4 and 0·6 gm. Those who were very ill were given further injections after an interval of 10 days, but not more than five injections in all were given.

The authors treated at Kiambi about the end of December, 1922, 91 cases mostly in the second stage (enlarged glands) and CONZEMIUS treated 40 others at Bukama. Blood examinations were made as far as possible every 8 days. Of 90 cases fairly regularly examined only 2 showed the parasites in the blood up to May 9, 1923, and possibly these were reinfections. Two maniacal patients showed complete disappearance of mental trouble after three injections; seven advanced cases remained in a clinically unsatisfactory state, although trypanosomes disappeared from their blood and in only two of them did parasites remain in the spinal fluid. Dr. WALRAVAENS will continue the observations on these cases and report further in due course. The most important result in the authors' opinion is that, even in cases which show no clinical cures, the blood can be sterilized for long periods. Consequently, if all suspected cases were systematically treated by travelling doctors or sanitary officials, the sources of infection of the fly would disappear and the disease be stamped out over wide areas. Of course, the treatment should go on *pari passu* with improvements of sanitary conditions.

The animals most easily cured are those which are not suffering from natural infections. Thus *T. caprae* in the goat and *T. bovis* (*T. vivax*) in cattle are very resistant. *T. brucei*, really a parasite of the buffalo, has not quite the same resistance in cattle. Human trypanosomiasis is the easiest to cure since man has not harboured the parasites for very long. [This in the reviewer's opinion is a pure assumption with little to support it. The reason why man is more easily cured than cattle can be explained by quite a different hypothesis and one which, in the reviewer's opinion, is much more reasonable.]

W. Y.

DE BUEN (S.) & LUENGO (E.). **Ensayos terapéuticos con el "Bayer 205" en dos casos de tripanosomiasis humana.** [The Use of "Bayer 205" in Two Cases of Human Trypanosomiasis].—*Arch. Inst. Nac. Higiene de Alfonso XIII.* 1923. Aug. Vol. 2. No. 2. pp. 85–96. With 15 charts. [8 refs.]

Two cases of human trypanosomiasis (*T. gambiense*) were treated with "Bayer 205." Judging from the symptoms recorded both were mild or in an early stage. The initial dose was 0·25 gm. and within the first week 3 gm. and 3·5 gm. were given, respectively. The fever disappeared at once, but returned in a fortnight and trypanosomes were again found. Three courses of the drug were given in each case, totalling 17·05 gm. in one patient during a period of seven months, 16·3 gm. in the other during five months. Towards the end of the time during which the patients were under observation there were brief recurrences of fever but no parasites were found on blood examination. Albuminuria, noticed after the initial doses, was not increased in amount by subsequent injections, and, in view of the low toxicity of the drug, the authors are of opinion that the maximum doses recommended as "safe" might be increased without danger. This they intend to try in future cases.

H. Harold Scott.

Sei (Shigemoto). **Ueber den Nachweis von "Bayer 205" in den Organen behandelter Tiere.** [The Demonstration of "Bayer 205" in the Organs of Treated Animals.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. Aug. Vol. 27. No. 8. pp. 257–268.

The conclusions are :—

The investigation of organ extract—obtained by rubbing up the organs with phenol saline solution in a mortar with sand—of guinea-pigs which had received two large doses of "Bayer 205," and had then been killed by bleeding, showed that the drug was present in the various organs in large amount ; the extracts exerted a therapeutic effect on mice infected with *T. equiperdum*.

Renal extracts were most active, then those of the liver and supra-renals, and lastly those of the spleen and lungs. Extracts of brain and bile were completely inactive ; that of the liver was sometimes toxic. Extracts made from 1 to 15 days after administration of the drug were active, but those made after 29 days were inactive.

The observation is not to be explained on the assumption that the drug is present in the blood or serum content of the organs, since the drug is apparently in smaller amount in the circulating blood than in the organs.

W. Y.

Ruppert (Fritz). **Ueber die Veränderlichkeit des chemotherapeutischen Quotienten von Medikamenten in verschiedenen Tieren.** [On the Variability of the Chemotherapeutic Quotients of Drugs in Different Animals.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. Aug. Vol. 27. No. 8. pp. 273–280. [2 refs.]

Biological studies of chemical preparations can be conducted only on animals, and conclusions drawn as the results of experiments on small animals do not necessarily apply to the case of the large animals and man. It is possible to cure mice infected with a strain of trypanosomes by a single dose of a drug which is only a fraction of the lethal dose, whereas large animals infected chronically with the same trypanosome cannot be cured by a single dose even when it approaches the lethal amount. There is hence a difference in the action of the drug in acute and chronic infections ; in the latter the parasites are sheltered in some situation in the body from the action of the drug. There are drugs which have an action in chronic infections, although in mouse experiments their chemotherapeutic index is less than that of other preparations. For example, the index of atoxyl in trypanosome infections in the mouse is 1 : 2 to 1 : 3, whereas that of salvarsan is 1 : 10 and that of silversalvarsan 1 : 22 ; nevertheless, atoxyl is more valuable in the treatment of man and the larger animals than are the salvarsan preparations. The reason for this is the drugs are absorbed, changed or excreted differently in different animals. This is another illustration that results obtained from small animals do not warrant conclusions regarding large animals.

The experiments recorded in this paper deal with the chemotherapeutic index of "Bayer 205" in various animals. In mice it was found that the curative dose was to the lethal dose as 1 : 400. Experiments on rabbits showed that the lethal dose was 0·5 to 0·6 gm. per kilo of body-weight, whereas the curative dose for rabbits infected with *T. equiperdum* was 0·05 gm. The chemotherapeutic index then in the case of rabbits is only about 1 : 10. The lethal dose of the drug

for horses was found to be about 1 gm. per 50 kilos of body-weight ; *i.e.*, the drug is about 25 times as toxic per kilo for horses as it is for rabbits. Experiments to determine, by the usual method, the curative dose in the case of horses infected with mal de caderas are for various reasons unsatisfactory and fraught with considerable difficulties, and in view of this it was decided to examine the prophylactic power of the drug. Eight horses were given quantities of " Bayer 205 " varying from 0·25 gm. to 0·75 gm. per 50 kilos of body-weight, and then after an interval varying from 15 to 51 days injected with *T. equinum*. The results which are set forth in a table show that 0·5 gm. of the drug per 50 kilos is sufficient to protect horses inoculated 15 and 34 days later. The inference is that 0·5 gm. per 50 kilos is the curative dose. In order to demonstrate the curative action of 0·5 gm. of the drug, five chronically infected horses were treated with doses varying from 1 gm. to 0·5 gm. per 50 kilos ; the results are given in a table. The chemotherapeutic index for horses infected with mal de caderas is hence only 1 : 2.

W. Y.

Bleyer (J. Clarke). **Ueber eine merkwürdige indianische Behandlungsweise eines Falles von Thyreoiditis parasitaria.** [A Remarkable Indian Method of treating a Case of Parasitic Thyroiditis.] —*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. July. Vol. 27. No. 6. pp. 197–202. [4 refs.]

This paper describes the treatment of a case of Chagas' disease in a mestizo woman sixty years of age, who apparently contracted the infection near Palmeira in Uruguay. The history of the case records that she lived in a hut heavily infested with Triatoma ; in the course of time she suffered from a peculiar fever accompanied by a swelling in the front of the neck which within a year assumed monstrous proportions. Infiltration of the face, especially under the eyes, developed, and disturbances of respiration and of the heart's action set in. The patient then came under the care of a native doctor, " Curandeira," who undertook to relieve her of the thyroid tumour. The treatment consisted in heating fat of wild and of domestic fowl on porphyry plates over glowing charcoal and then binding the fat as hot as possible over the swelling. The pain caused by this procedure was extreme ; after a few days an opening occurred and material was evacuated, the process being aided by pressure and massage. The flow of inflammatous secretion went on for weeks and the tumour gradually shrank. Fresh aromatic leaves were applied to the wound daily. Internally bitter drugs of unknown nature, possibly allied to quinine, were given and finally " oil of capivara " made from the fat of *Hydrochoerus capivara*. The result is apparently all that could be desired, the fever and respiratory disturbances have gone and the appetite and sense of well-being restored.

W. Y.

Münch (Hubert). **Die Bestimmung des trypanoziden Serumtiters als Leberfunktionsprobe.** [The Determination of the Trypanocidal Titre of the Serum as a Test of Liver Function.]—*Muench. Med. Woch.* 1923. July 20. Vol. 70. No. 29. pp. 945–946. [15 refs.]

Reference is made to previous work on this subject by Rosenthal and Freund and others [this *Bulletin*, Vol. 19. pp. 154, 520, and Vol. 20, p. 337]. The author examined the trypanocidal titre of the serum in

65 cases—37 suffering from diseases of the liver and 28 healthy or suffering from diseases not involving the liver. In the latter group, the titre varied considerably and in the case of two new-born babies was very low; but, on the whole, the 37 cases of the former group exhibited a distinctly lower titre, except in two cases of cancer of the liver and four of very advanced cirrhosis, in which it was almost normal. All these results are, however, of limited value, as the titre of the patient's serum when in health was unknown. The author believes that these experiments throw a light on what seems to be one of the important functions of the liver, but they do not justify the determination of the trypanocidal titre as an aid to diagnosis of hepatic diseases.

W. Y.

Lake (G. C.) & Probey (T. F.). **The Effect of "Arsenic-Fastness" of *Trypanosoma equiperdum* on the Ratios between the Parasiticidal Values of Arsphenamine and Neoarsphenamine.**—*Public Health Rep.* 1923. June 15. Vol. 38. No. 24. pp. 1347–1350. [2 refs.]

The following summary is given :—

"The minimal effective doses of a single lot each of arsphenamine and neoarsphenamine have been determined for three 'arsenic-fast' strains of *Tr. equiperdum* and for one non-arsenic-fast, 'normal,' or possibly arsenic-susceptible strain. All four strains were substrains from the same common strain.

"With the 'arsenic-fast' strains the minimal effective dose for this arsphenamine and neoarsphenamine was found to be about the same and not far from 50 mgm. per kilo, whereas with the 'normal' strain the minimal effective dose for the same arsphenamine was found to be between 3 and 4 mgm. per kilo, and for the same neoarsphenamine about 12 mgm. per kilo.

"No explanation is apparent as to why an 'arsenic-fast' strain should be proportionately less resistant to arsphenamine than to neoarsphenamine."

W. Y.

Swynnerton (C. F. M.). **A Critical Summary of the Preliminary Observations on the Sleeping Sickness Outbreak near Mwanza.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. June 21. Vol. 17. No. 3. pp. 142–150. With 1 map.

This paper is practically a summary of the lengthy article, dealing with the entomological aspects of the Mwanza outbreak of sleeping sickness, published by the author earlier in the year [this *Bulletin*, Vol. 20, p. 311].

W. Y.

Muijzert (P. C.). **Enting van Trypanosomen in de voorste oogkamer van *Cavia cobaya*.**—*Tijdschr. v. Vergelijk. Geneesk., enz.* Leiden. 1923. Sept. 26. Vol. 9. No. 3. pp. 222–231. [6 refs.] [English summary p. 229.] [6 refs.]

The author has taken pains to demonstrate that an experimental intraocular infection of guinea-pigs with *Trypanosoma venezuelense*, *equiperdum*, *brucei*, *rhodesiense*, *gambiense* and *evansi* soon becomes general, and, conversely, that in a general infection trypanosomes of undiminished virulence may be found in the anterior chamber of the eye.

A. Alcock.

Munk (Fritz). **Die Chagaskrankheit. Bericht ueber eine Expedition in Brasilien.**—*Med. Klin.* 1923. June 10 & 17. Vol. 19. Nos. 23 & 24. pp. 784–788; 822–824.

BLACKWATER FEVER.

BLACKLOCK (B.). **The Etiology of Blackwater Fever.**—*Ann. Trop. Med. & Parasit.* 1923. Apr. 18. Vol. 17. No. 1. pp. 79-87. With 1 chart in text. [6 refs.]

The author summarizes briefly some of the theories which have been advanced regarding the etiology of blackwater fever. CASTELLANI and CHALMERS in the last edition of their text-book separate the haemoglobinurias which may occur in the tropics into three groups, viz.—Symptomatic (*e.g.* malaria), toxic (*e.g.* quinine), and specific (*e.g.* blackwater fever and paroxysmal haemoglobinuria); a table gives the various symptoms, which these authors regard as characteristic of the three conditions. Blacklock shows how nebulous the distinctions are. It is commonly stated that blackwater is, owing to its severity, a condition which leaves no doubt as to diagnosis. The author believes, however, that closer investigation will reveal the fact that haemoglobinuria occurs frequently in the tropics without being observed, and that still more frequently haemolysis with slight jaundice occurs without noticeable haemoglobinuria, and that these conditions are in fact frequently due to the same causes as blackwater fever and are mild forms of the same condition. Some term is required for such conditions, to indicate that the process of haemolysis has not produced such a degree of haemoglobinuria as to result in the passage of haemoglobin in the urine. [The author does not state how he proposes that the last condition, *i.e.*, slight haemolysis with slight jaundice, but without haemoglobinuria, should be diagnosed.]

Numerous suggestions regarding the nature of the causal parasite of blackwater fever have been made during the last thirty years. In order to throw some light on the subject blood was taken from the patient at the height of the disease and added to half its volume of citrated salt solution; 0·6 cc. of this was injected intramuscularly into a healthy individual followed a quarter of an hour later by a further injection of 2 cc. The recipient had previously had subtertian malaria, but had been free from relapse for 18 months and had not taken quinine until the day of the inoculation for over eight months; to obviate infection with malaria thirty grains were taken during the 21 hours following the inoculation. It might be argued that the quinine might be capable of killing the blackwater organism, but there are numerous cases on record in which large doses of quinine have failed to abate or ameliorate the condition; also in the case in question quinine was administered intramuscularly on the sixth and seventh days of the disease without any beneficial result. The outcome of this experimental inoculation was negative.

The conclusions are :—

"1. The term 'Blackwater' Fever, being applicable only to conditions in which haemoglobin is present in visible quantity in the urine, is too restricted.

"2. The importance of pre- and post-haemoglobinuria states which are inherent parts of the disease, is apt to be lost sight of owing to the exclusive use of the term 'Blackwater' Fever. Some such term as 'Occult' or 'Subliminal' Blackwater Fever might be used to express these conditions.

"3. A differentiation of Tropical Haemoglobinurias into Malaria, Quinine and specific Blackwater types is not possible merely on the basis of the presence and degree of jaundice, or on the relative severity of the signs or symptoms.

"4. The existence of a parasitic cause of Blackwater Fever has been frequently suggested; an experimental human inoculation, with blood from a severe case of Blackwater Fever which ended fatally, elicited no evidence in favour of the existence of such a parasite after an observation period of two months."

W. Yorke.

KLIGLER (I. J.). **Studies on the Etiology of Blackwater Fever.**—*Amer. Jl. Trop. Med.* Baltimore. 1923. May. Vol. 3. No. 3. pp. 203–212. [2 refs.]

The following summary is given :—

"The series of observations reported in this paper seem to have a bearing on the mechanism of quinine hemoglobinuria. It appears that in the presence of bile quinine becomes highly hemolytic even in the small doses normally employed in the treatment of malaria. Some as yet undetermined constituent of bile has the power of rendering quinine hemolytic in one-tenth the concentration usually required. If we assume that the substance in question is liberated during the active destruction of blood cells in the course of repeated attacks of malaria, a simple theory of the mechanism of hemoglobinuria suggests itself. Hemoglobinuria patients invariably give a history of repeated attacks of malaria. In the course of these attacks cells products are constantly liberated in the circulation which may not at times be readily eliminated and thus reach a concentration higher than normal. At that time the injection of quinine causes hemolysis and hemoglobinemia which manifests itself by the appearance of hemoglobin in the urine.

"Experiments on rabbits carried on thus far have not yielded satisfactory results because of the difficulty of reproducing the exact conditions developed by chance in human beings. Hemoglobinuria was produced by the injection of bile but the dose injected bordered on lethality and consequently could not be relied on to give constant results. In four experiments mild hemoglobinuria was obtained by the injection of quinine followed by bile.

"It is realized that the observations reported are of a fragmentary character. They are, however, of value in so far as they establish that quinine becomes actively hemolytic even in small doses when acting in combination with bile, a product of destruction of red blood cells.

"The experiments are being continued with a view to finding some specific product of blood cell destruction which will increase the hemolytic power of quinine in the same manner as bile and the conditions required to produce hemoglobinuria experimentally in animals."

W. Y.

LOW (George C.) & DUNCAN (J. T.). **The Etiology of Blackwater Fever.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. June 21. Vol. 17. No. 3. pp. 201–204. [3 refs.]

The blood of a case of blackwater fever on the second day of the disease was examined for spirochaetes, by the method recommended by BLANCHARD and LEFROU [this *Bulletin*, Vol. 20, p. 353], with negative results. Numerous spirochaete-like filaments were observed, however, in the second and third deposits; most of them presented a linear beading and some also terminal thickenings. They moved in the microscope field in a manner entirely unlike spirochaetes; many were attached to platelets, but the actual development of a filament from a platelet was not observed, although there is no doubt that they arise

in this way. A great increase in the number of filaments occurred when the fresh microscope preparation was allowed to stand for some time. The bulk of the third deposit was suspended in citrated plasma and inoculated into four guinea-pigs with negative results.

W. Y.

THOMSON (J. G.). **The Common Occurrence of Pseudospirochaetes in the Blood of Blackwater Fever Cases, and of Normal Human Beings and Animals when using the Technique of Blanchard and Lefrou.**—*Jl. Trop. Med. & Hyg.* 1923. Aug. 1. Vol. 26. No. 15. pp. 251–253. [11 refs.]

In this paper, the author records the results of his attempts with the technique of BLANCHARD and LEFROU [this *Bulletin*, Vol. 20, p. 353] to find spirochaetes in the blood of Southern Rhodesian cases of blackwater fever. The blood was obtained at various stages of the disease, viz., on the first, second and third days of the onset and also after the haemoglobinuria had ceased. In every case the centrifuged deposits of the third tube contained numerous pseudospirochaetes of two types, namely, thick motile filaments of from 5 μ to 9 μ in length and longer extremely fine filaments very actively motile measuring from 7 μ to 12 μ in length. These filaments correspond in all respects to those seen in clotted blood from normal individuals; they have no spiral movement, but appear to be actively motile, wriggling and bending on themselves; they are more or less straight filaments without coils or spirals, but occasionally have a beaded appearance suggesting a chain of streptococci. When fixed and stained they are often thrown into coils, thus simulating true spirochaetes, but differing from such in that they do not stain so intensively or so regularly. The author states there is little doubt that the longer filaments originate from blood platelets and the stouter from degenerate or damaged erythrocytes. Inoculation of the centrifuged deposits from 10 cases of blackwater, taken at various periods of the disease, into 10 guinea-pigs failed to produce any symptoms.

The conclusions are :—

" There is at present no proof that any species of spirochaete or even a special species of spirochaete produces or even predisposes to an attack of haemoglobinuric fever. The whole evidence so far obtained by us in Southern Rhodesia undoubtedly shows in a remarkable manner the relationship of this condition to chronic malignant tertian malaria (*P. falciparum*), which clinically is of the bilious remittent type with occasional cases of coma."

W. Y.

ROBERTSON (G. E.) & MOORE (W.). **Blackwater Fever.**—*U.S. Nav. Med. Bull.* 1923. Oct. Vol. 19. No. 4. pp. 413–415.

The object of this communication is to present the authors' convictions regarding the cause and treatment of haemoglobinuric fever after two and a half years' experience in Haiti, during which period 626 cases of malaria and 13 of blackwater came under their observation. The paper concludes as follows: " It is our belief that blackwater fever is a manifestation of pernicious malaria and should be classed along with the cerebral, algid, bilious, remittent, and other forms of pernicious malaria. We also believe that the administration of intravenous quinine is the most important remedy for its cure."

W. Y.

MACMILLAN (R. J. A.). **Report on Blackwater Fever in Uganda for 1922.**—*Uganda Protectorate Ann. Med. & San. Rep. for the Year ended 31st December, 1922.* pp. 49–52.

During 1922 there were 83 cases of the disease with 14 deaths—7 from suppression, 2 from uraemia and 5 from heart failure. In tables details are given regarding the sex, age and length of residence in the tropics of the various cases. In all cases except one a previous history of malaria is recorded ; the malaria was mainly simple tertian. With regard to the question of quinine prophylaxis, it is recorded that quinine was taken regularly by 13 cases, irregularly by 56, not taken by 10, and unknown in 4 instances. Among 23 cases it is recorded that twelve had had 1 previous attack of blackwater, six had had 2, three had had 3, one had had 10, and one an unknown number of previous attacks. The duration of the haemoglobinuria is given in a table.

W. Y.

i. NIGERIA. **Annual Report on the Medical Research Institute for the Year 1919.** [CONNAL (A.), Director.]—20 pp. [Blackwater Fever, pp. 3–11.]

ii. ——. **Annual Report on the Medical Research Institute for the Year 1921.**—14 pp. [Blackwater Fever, pp. 6–11.] 1922. Lagos : Printed by the Govt. Printer.

i. Reports received from medical officers on 28 cases of blackwater during 1919 are analysed. Twenty-six of the patients were Europeans, one was an Eurasian and the other a Nigerian native. Details are given regarding the sojourn in West Africa, the previous malaria, use of quinine, etc. A certain amount of information concerning the onset of the attack was available in 21 of the cases. The average length of the haemoglobinuria was 4½ days, the extremes varying from 2 to 6 days. Eight of the patients died after an illness varying from 2 to 14 days, and clinical particulars of these cases are given in a table. The report closes with records of the result of examination of the blood for malaria parasites.

ii. During the year 1921 reports of 26 cases were received. The duration of the haemoglobinuria varied from 20 hours to 7 days, and the number of fatal cases was eight. The information available regarding these cases is summarised in much the same manner as in the previous report.

W. Y.

DUPUY (L.). **Considérations sur la pathogénie et le traitement des fièvres bilieuses hemoglobinuriques.**—*Ann. Soc. Belge de Méd. Trop.* Brussels. 1923. May. Vol. 3. No. 1. pp. 53–62. [12 refs.]

The author commences his paper by briefly summarizing the various theories which have been advanced regarding the cause of blackwater fever. He concludes that just as the clinical symptoms of the bilious haemoglobinuric fevers are similar, so their pathogenesis is most often the same. This pathogenesis is that of colloidoclasia of WIDAL (accidents colloïdoclassiques). Proteintherapy is called to play a great part in the treatment of these diseases.

From the point of view of prophylaxis it is important to insist more particularly :—

1. On the importance of testing the effect of increasing doses of quinine on future colonials before their departure from Europe.
2. That Europeans should take regularly daily doses of quinine during their sojourn in the Colonies.
3. On the importance of avoiding chills.
4. On the rational division of the therapeutic doses of quinine and on the oral administration of peptone previously in anaemia, or very debilitated and sensitive subjects.

W. Y.

YOUNG (W. A.). **A Theoretical Suggestion as to the Cause of So-called "Blackwater Fever" and a Few Notes on Treatment and Prophylaxis.**—16 pp. 1922. Lagos: Printed by the Govt. Printer. [Price not stated.] And *Jl. Trop. Med. & Hyg.* 1923. Dec. 1. Vol. 26. No. 23. pp. 349–355.

The conclusions are as follows:—

"(1) The presence of polychromatocytes is of great diagnostic value as to the presence of obscure malaria.

"(2) 'Blackwater Fever' is not a disease *per se* but only a complication of a severe infection of malaria. This complication which might occur, and sometimes does if the patient can survive, otherwise is made premature by the exhibition of a certain dose of quinine usually larger than the patient is accustomed to take. Its action on the large number of severely poisoned cells accounts for the 'Malarial Haemoglobinuria.'

"(3) To prevent Malaria, prophylactic quinine must be used scientifically and not indiscriminately.

"(4) Any change in the environment or individual health may alter the prophylactic dose required.

"(5) Quinine is the only remedy for subtertian malaria at present of any value.

"(6) So-called 'Blackwater Fever' is a blot on the intelligence of the community and should never be seen under normal peace conditions.

"(7) Any factor *which impairs the body's efficiency* may turn a not too severe attack of malaria into one of malarial haemoglobinuria."

W. Y.

BALL (Ernest). **Eleven Cases of Blackwater Fever with Eleven Recoveries.**—*Jl. Amer. Med. Assoc.* 1923. June 23. Vol. 80. No. 25. p. 1847.

HALL (G. Rome). **"Blackwater," a Disease of Metabolism.**—*Jl. Trop. Med. & Hyg.* 1923. Apr. 16. Vol. 26. No. 8. pp. 119–123.

KUTTNER (L.) & LOEWENBERG (W.) **Malaria und Schwarzwasserfieber.**—*Deut. Med. Woch.* 1923. Aug. 17. Vol. 49. No. 33. pp. 1080–1081. [13 refs.]

PLAGUE.

ROBERTSON (H. McG.). **A Possible Explanation of the Absence of Bubonic Plague in Cold Countries.**—*Public Health Rep.* 1923. July 6. Vol. 38. No. 27. pp. 1519–1531. [1 ref.]

It will suffice to give the author's conclusions, supported, in a long paper, by several tables of statistics :—

" (1) Bubonic plague is essentially a disease of hot climates, and, having been introduced into tropical countries, it tends to persist indefinitely.

" (2) Outside of the immediate Tropics, this disease is rather definitely limited in the extent to which it will spread. [?]

" (3) In countries with a mean midwinter temperature of 45° F. or below, bubonic plague is occasional, accidental and distinctly self-limited, and it seems possible for it to occur in the colder regions only for short periods under unusual conditions. [? Russia, Siberia, etc.]

" This study appears to me to sustain the deduction that the seasonal prevalence of fleas regulates the spread of bubonic plague ; otherwise it becomes necessary to find at least some equally reasonable explanation for the absence of bubonic plague in cold countries."

J. H. Tull Walsh.

TANON (L.). **Le rat reservoir de virus pour la peste.**—*Congrès de la Santé Publique et de la Prévoyance Sociale, Marseille,* 11–17 *Septembre* 1922. *Comptes Rendus.* pp. 249–254.

These experiments show that true rat carriers, healthy animals, contain plague bacilli with attenuated virus, from which source virulent infection may arise under favourable conditions.

J. H. T. W.

NEILSON (H. R.). **Plague Epidemic, Kampala, 1922.**—*Uganda Protectorate Ann. Med. & San. Rep. for the Year ended 31st December, 1922.* pp. 66–68.

An official report of an outbreak of plague and the methods of treatment and sanitation. The final paragraph may well be quoted as of good omen :—

" In addition to the above, a plentiful supply of fresh vaccine, and with a few exceptions, whole-hearted co-operation of all residents, official and non-official, in helping me to carry out measures necessary in my opinion to stop the spread of the disease, have been factors, in the absence of which, a very serious epidemic must have been the result."

[See this *Bulletin,* Vol. 20. p. 357 (VASSALLO).]

J. H. T. W.

MARSHALL (Claude H.) & RAM (Achhru). **Treatment of Plague by Neokharsivan.**—*Uganda Protectorate Ann. Med. & San. Rep. for the Year ended 31st December, 1922.* pp. 68-69.

During the outbreak recorded by NEILSON [above] four cases of bubonic plague were successfully treated with Neokharsivan ; 0·6 gm. for an adult ; 0·4 gm. for a child of 12 ; and only one injection was given. Three more cases were treated subsequently. In one serious case, delirious for seven days, two injections of 0·6 gm. were given intravenously with an interval of 48 hours ; 1·0 cc. tincture of iodine was injected into the bubo on the second day and adrenalin ℥ vii injected daily for three days until the diarrhoea stopped. Recovery

was uninterrupted, except for the breaking down of the bubo. Case 2 also recovered. The third case showed blood from the finger full of *B. pestis* and the woman, ill for three days before coming to hospital, was collapsed. She received an injection of neokharsivan, but died a few hours after admission.

J. H. T. W.

Tsurumi (M.), Hara (C.), Imai (M.), Awoki (T.) & Sakamoto (T.). **An Investigation of Pneumonic Plague.**—*Japan Med. World.* Tokyo. 1923. July 15. Vol. 3. No. 7. and Aug. 15. No. 8. pp. 153–160; 181–187.

A detailed examination of pathological material supplied by the epidemic prevalent in Manchuria 1920–1921. The authors state that no plague bacilli were found in the gall bladders of the cases examined. They also write :—"We cultured plague bacilli in the bile of a cow to see the growth, but instead of growing the bacilli seemed to be dissolved out gradually." The August number contains routine laboratory work on infection, agglutination, etc.

[For references to this epidemic see this *Bulletin*, Vol. 19, p. 372 (Wu Lien Teh), and Vol. 20, p. 358 (Chun).]

J. H. T. W.

Leger (M.) & Baury (A.). **Vaccination contre la peste par la voie buccale.**—*Bull. Soc. Path. Exot.* 1923. July 11. Vol. 16. No. 7. pp. 469–475. [11 refs.]

The authors refer to previous work and then give details of a series of experiments on rabbits, guineapigs and monkeys. The bile sensitized vaccine of Besredka was used since this is the only form of vaccine likely to be absorbed from the intestines. They state that they admit that immunization of laboratory animals may be obtained by buccal administration of killed cultures after these animals have been previously prepared with doses of ox-bile. The table gives full details and results for guineapigs and monkeys :—

ANIMAUX.	VACCINATION.	INOCULATIONS VIRULENTES.		
	20, 22, 24, 26, 28, février.	10 mars. (10e jour).	20 mars. (20e jour).	10 avril. (40e jour).
Cobaye 30 ..	3 cm³ bile + 3 cm³ vaccin	Résiste	..	.
Cobaye 33 ..	1 cm³ bile + 3 cm³ vaccin	Résiste	..	..
Cobaye 48 ..	..	Mort 3 jours	..	..
Cobaye 49 ..	..	Mort 5 jours	..	..
Cobaye 35 ..	1 cm³ bile + 3 cm³ vaccin	..	Résiste	..
Cobaye 37 ..	1 cm³ bile + 3 cm³ vaccin	..	Résiste	..
Cobaye 59 ..	..	..	Mort 5 jours	
Cobaye 60 ..	..	..	Mort 8 jours	..
Cobaye 32 ..	3 cm³ bile + 3 cm³ vaccin	..	..	Résiste
Cobaye 36 ..	1 cm³ bile + 3 cm³ vaccin	..		Résiste
Cobaye 34 ..	1 cm³ bile + 3 cm³ vaccin	.	.	Mort 7 jours
Cobaye 65 ..	..	..	..	Mort 3 jours
Cobaye 66 ..	..	..	..	Mort 5 jours
Singes :				
Patas	3 cm³ bile + 5 cm³ vaccin	Résiste	.	..
Callitriche ..	..	Résiste	..	..
Cynocéphale ..	3 cm³ bile + 5 cm³ vaccin	..	Résiste	..
Patas	..	..	Mort 15 jours	..
Callitriche ..	3 cm³ bile + 5 cm³ vaccin	..	..	Résiste
Callitriche ..	..	..	..	Mort 18 jours

J. H. T. W.

BOMBAY. **Report of the Bombay Bacteriological Laboratory for the Year 1922.** [MACKIE (F. P.). Offg. Director].—15 pp. With 1 chart. 1923. Bombay: Government Central Press. [Price Rs. 0.4.6.]

The report for 1921 was noticed in Vol. 20 of this *Bulletin*, p. 364, so that it is only necessary to state that during 1922, 972,037 doses of anti-plague vaccine were issued to the various Presidencies, Native States, etc. The largest number of doses—306,822—went to the Madras Presidency. 755,938 rats were sent to the laboratory for examination. Of this number 276,408 were alive and 479,530 dead when received. Of this latter 344,546 were examined and 6,404 (1·9 per cent.) were found infected with plague. Tables of human and rat mortality for 1922 are given.

J. H. T. W.

BOUFFARD (G.) & GIRARD. **Le dépistage de la peste par la ponction du foie. Son importance prophylactique.**—*Bull. Soc. Path. Exot.* 1923. July 11. Vol. 16. No. 7. pp. 501–523. (Discussion. pp. 523–524.) [6 refs.]

This method refers to the detection of plague in dead bodies, bodies perhaps found dead or those of persons dying with the disease not strictly diagnosed. The investigations were carried out over a period of 20 months in Madagascar. Puncture of the liver does not require any incision and post mortem examinations are disliked by the natives. A puncture of the liver is not objected to. The results from 3,500 punctures show that the plague bacillus is easily recognized and is not liable to be confused with any other germ. Among the living puncture of the liver has also been employed for diagnosis. One of the authors had a case in which the patient, a woman, was brought to hospital at 10 a.m. and died five hours later. Diagnosis of plague was secured at once by a puncture made on admission. In another case simple puncture of the liver detected plague in a patient who had been under treatment for typhoid fever for five days.

J. H. T. W.

OHOTO (Osamu). **On the *B. pestis* in Blood and its Cultivation.**—*Japan Med. World.* Tokyo. 1923. June 15. Vol. 3. No. 6. pp. 136–137.

The author working at the Isolation Hospital, Osaka, failed in finding *B. pestis* in smears taken directly from plague cases. He therefore inoculated the blood into bile media as used by CONRADI and KAYSER. He also employed bouillon with 1·0 per cent. sodium citrate. His results were satisfactory and show that with these media 72·2 per cent. of the patients examined gave positive results. He considers that plague septicaemia is not so rare as supposed.

B. pestis in the blood disappears as early as two days and at the latest after 10 days. Thus, in mild cases, if present, the organism disappears quickly from the blood and in severe cases where the prognosis is bad the organism appears to remain in the blood until death.

J. H. T. W.

GUINON, DE PFEFFEL & LAMY. **Un cas de septico-pyohémie mixte à bacilles de Yersin et à pneumocoques d'évolution subaiguë.**—*Bull. et Mém. Soc. Méd. des Hôpit. de Paris.* 1923. Aug. 2. 3rd Ser. Vol. 39. No. 27. pp. 1259–1264. [5 refs.]

No case of plague had been admitted to the Bretonneau Hospital for two years until the case here reported, and another in a child, a

case of simple plague, were diagnosed [see this *Bulletin*, Vol. 17, p. 392 (GUINON, etc.); and Vol. 18, p. 348 (TEISSIER, etc.)]. The first case mentioned above is given in full detail. The patient, a child of 12 years, died of pyaemia and plague. A mouse inoculated with pus from the inflamed glands of the neck died in six days. A guineapig and a mouse inoculated from a culture of the mixed germs showed in their blood and organs both *B. pestis* and the pneumococcus.

J. H. T. W.

VILLAZON (Nestor Morales). **Bactériophage efficace contre le bacille de la peste.**—*C. R. Soc. Biol.* 1923. Oct. 13. Vol. 89. No. 27. pp. 754–756.

A culture, obtained from the spleen of a rat, resembling somewhat that of *B. coli* showed after three days certain spots where lysis was taking place and finally the colony disappeared. The material removed from the marked spots was sown in three tubes of bouillon; after 24 hours at 37° C. the liquid was passed through a Berkefeld filter. Details are then given of the effects produced with the microbe X.

The plague bacilli of infected wild rats were then studied. The culture filtrates in two cases produced lytic "plaques" in the cultures of a Yersin's bacillus (type Bachmann I). On the 14 July two rats had been inoculated with this plague bacillus, the bacteriophage being added for one of the rats. They both died on the 17th, and in the latter fewer *B. pestis* and fewer lesions were found than in the other one.

[This work needs confirmation and no doubt others will repeat the investigation—see this *Bulletin*, Vol. 17, p. 396 (d'HERELLE), also *Sanitation Supplement*, No. 3, Oct. 1923, p. 182 (Bacteriophages)].

J. H. T. W.

i. RENAUD (H. P. J.). **La peste au Maroc : étude d'épidémiologie et de géographie médicale.**—*Rev. d'Hygiène.* 1923. Mar. Vol. 45. No. 3. pp. 193–215. With 3 figs. [13 refs.]

ii. HIRST (L. Fabian). **On the Spread of Plague in the East Indies.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. June 21. Vol. 17. No. 3. pp. 101–123. (Discussion. pp. 123–127.)

iii. ZABOLOTNY (D.). **Les épidémies de peste en Russie, au cours de ces dernières années.**—*Bull. Soc. Path. Exot.* 1923. July 11. Vol. 16. No. 7. pp. 467–469. [6 refs.]

iv. LETHEM (William A.). **The Epidemiology of Bubonic Plague in Great Britain, with Special Reference to its Spread by "*Pulex Irritans*."**—*Jl. State Med.* 1923. Nov. Vol. 31. No. 11. pp. 508–515. [11 refs.]

v. REENSTIERNA (J.). **Essais de vaccination préventive par l'emploi des cultures mortes du bacille de Ducrey contre l'infection streptobacillaire et la peste.**—*Arch. Inst. Pasteur de Tunis.* 1923. July. Vol. 12. No. 2. pp. 249–252. [3 refs.]

vi. LE DANTEC. **A propos du traitement de la peste.**—*Congrès de la Santé Publique et de la Prévoyance Sociale, Marseille, 11–17 Septembre, 1922. Comptes Rendus.* pp. 246–249.

vii. HECKENROTH (F.). **La Prophylaxie et le traitement de la peste dans les Colonies francaises.**—*Congrès de la Santé Publique et de la Prévoyance Sociale, Marseille, 11–17 Septembre*, 1922. *Rapports.* pp. 277–313. [1 ref.]

i. The author reports that since 1912 plague has been present every year in some part of Morocco, with a serious epidemic in 1911. He gives a map showing the routes along which the infection spread and an ethnographical map.

ii. Contains a good account of reasons for the spread of plague in India, etc.; based on work already noticed in this *Bulletin*, Vol. 20, pp. 359-360. [*Cf.* CRAGG & SWAMINATH, Vol. 20, p. 798.]

iii. *V.* this *Bulletin*, Vol. 20, pp. 357-359 (DOBREITZER, ZABOLOTNY, etc.).

iv. An interesting account of outbreaks of plague, in Great Britain, compiled from many sources.

v. These experiments, described in detail, were carried out at the Pasteur Institute, Tunis, and at the Rabta Hospital, Tunis. The results were negative for men, monkeys and in the plague infection experiments for guinea-pigs; no immunity was obtained.

vi. Refers to the treatment of cases of plague during epidemics in Dakar, 1918 to 1922, already noticed in this *Bulletin*.

vii. Useful and interesting but the paragraphs referring to the separate Colonies cannot be condensed.

J. H. T. W.

ILVENTO (A.). **Alcuni rilievi sull' epidemiologia e sulla cura della peste bubbonica.** [On Epidemiology and Treatment of Bubonic Plague.]—*Policlinico.* Sez. Prat. 1923. Oct. 22. Vol. 30. No. 43. pp. 1391–1392.

REES (William). **The Black Death in England and Wales, as exhibited in Manorial Documents.**—*Proc. Roy. Soc. Med.* (Sect. of History of Med.). 1923. Oct. Vol. 16. No. 12. pp. 27–45. With 1 chart. [Refs. in footnotes.]

WILLIAMS (C. L.) & KEMMERER (T. W.). **Plague-Infected Rats without Visible Lesions. The Discovery of Bubonic Plague only in Rats without Lesions or with Obscure or apparently Trivial Lesions, after Subsidence of Two Recent Epizootics.**—*Public Health Rep.* 1923. Aug. 17. Vol. 38. No. 33. pp. 1873–1881. [8 refs.]

CHOLERA.

SANARELLI (G.). **Patogenesi del colera (VII Memoria). Vie d'ingresso e d'egresso dei vibrioni colerigeni nell'organismo animale.** [Pathogenesis of Cholera.—Entrances and Exits of Vibrios.]—*Ann. d'Igiene.* 1923. July. Vol. 33. No. 7. pp. 457–490. [47 refs.]

1. In rabbits, as in adult guinea-pigs, vibrios injected into the peritoneal cavity pass rapidly into the blood and thence, in a very short time, into the walls of the intestines.

3. The gastric contents of adult guinea-pigs and rabbits are so acid that the bacilli administered by the mouth are quickly killed.

4. Vibrios placed on the buccal mucous membrane of rabbits can traverse the epithelium; they reach the intestinal walls either by way of lymph or blood circulation; old cultures rich in spheroidal forms seem indispensable to success in these experiments.

10. In adult rabbits the respiratory mucous membrane is easily permeable by cholera vibrios.

[For references to previous Memoirs see this *Bulletin*, Vol. 19, p. 736.]

J. H. Tull Walsh.

SANARELLI (G.). **De la pathogénie du choléra (huitième mémoire). L'algidité cholérique.**—*Ann. Inst. Pasteur.* 1923. Sept. Vol. 37. No. 9. pp. 806–836. [27 refs.]

The greater part of this memoir is taken up with the possible origin of algidity and actual production of a similar state in guineapigs by injections of *B. coli* into the blood together with injections of *V. cholerae* into the peritoneum. The "Colitoxin" is given six or seven hours after the infection with vibrios. The author states:—

The number of points of contact that one finds between the symptomatology and the anatomic lesions in this kind of algidity obtained experimentally in guineapigs, and the algid state observed in human cholera, permits, so it seems to me, to class, from now, cholera algidity among the anaphylactic phenomena. Algidity would only be a brusque access after a preparatory phase of sensitization or incubation, represented by the simple and direct action of the vibrios on the mucous membrane of the intestine and then set going by the joint action, as unexpected as it is indispensable, of other microbes, or their proteid. These are, as a rule, *B. coli*, staphylococcus, etc., temporary, but nearly always habitual, inhabitants of the lymphatics of the alimentary canal. Following upon the enteritic action of the vibrios, these others are roused and become exalted in virulence pouring into the blood their antigen and invading, very often, the different viscera.

J. H. T. W.

Toda (T.). **Cholera and the Ship "Cockroach."**—*Jl. of Hyg.* Aug. Vol. 21. No. 4. pp. 359–361. [8 refs.]

The author examined the faeces of cockroaches which had previously ingested cholera cultures, to determine how long the vibrios were capable of surviving in the intestines of the insects. The cockroaches belonged to the species *B. germanica* and were collected from Japanese liners. Each insect was kept in a test-tube plugged with cotton wool until it became hungry, usually one to three days, in a few cases seven. It was then transferred to a tube containing bread soaked in an emulsion of *V. cholerae*. Females carrying egg cases refused the food, the rest ate it greedily. Out of 94 insects evidence of living vibrios in the faeces or in the intestines after death (killed) was obtained in 14, about 15 per cent. The cockroach must be considered as a possible carrier of infection on ship-board or elsewhere.

J. H. T. W.

Nomura (Teiichi) & Nagashima (Manabu). [**On the Relation between Cholera Carriers and Prophylactic Inoculation.**]—*Osaka Ig. Kw. Z.* 1921. Vol. 20. pp. 201–206. [Summarized in *Japan. Jl. Med. Sciences.* Tokyo. 1922. Vol. 1. No. 2. pp. 169 and 202.]

These abstracts contain figures showing :—(1) that the total number of segregated persons exposed to infection during the cholera epidemic in Osaka city in 1921, was 2,371. Of 22 it could not be said with certainty that they had received prophylactic anti-cholera inoculation. The non-vaccinated were 1,688 of whom 340 (20·14 per cent.) took infection and 57 (3·38 per cent.) were carriers. Out of 661 vaccinated persons 43 were infected (6·51 per cent.) ; 13 (1·97 per cent.) were carriers, and 609 proved immune. The abstract on p. 202 refers to the same epidemic and the same statistics.

J. H. T. W.

Glotoff (E.). **De l'immunisation contre le choléra par voie buccale.**—*C. R. Soc. Biol.* 1923. July 7. Vol. 89. No. 24. pp. 368–369. [1 ref.]

This paper refers to experiments on rabbits :—Ten fasting rabbits received for three following days doses of killed cholera vibrios, by the mouth ; ten other rabbits previously sensitized with ox-bile received by the mouth similar quantities of killed vibrios. Then, at intervals varying from 5 to 48 days the 20 rabbits were inoculated with a lethal dose of *V. cholerae* in the marginal vein of the ear. All the non-sensitized rabbits died. Of the 10 bile-sensitized rabbits 7 survived ; 1 died from an accidental cause ; the other 2 lived from 2 to 5 days longer than any of the first group. This immunity appears about the fifth day and may exist even on the 45th day. It appears to be established without the formation of antibody, and to be local in the intestinal tissues. [*Cf.* this *Bulletin*, Vol. 20, p. 372 (Zabolotny) ; also Vol. 19, p. 737 (Masaki)].

J. H. T. W.

GAMALEIA. [**De l'entérovaccination dans le choléra.**]—*Prophylactitchesk. Mediz.* 1922. Nov.–Dec. Nos. 4 & 5. pp. 14–18. [Summarized in *Bull. Inst. Pasteur.* 1923. Sept. 15. Vol. 21. No. 17. p. 696.]

The vibrios, grown on bouillon, are killed at 120° and then kept at laboratory temperature for a fortnight thus augmenting the toxicity of the liquid. The liquid is next distilled over a fire and the product precipitated with a solution of phospho-molybdic acid. The vaccine passes into the precipitate as "choleramine" removed by trituration with baryta. The excess of barium is then removed with sulphuric acid.

Experiments were made by feeding guinea-pigs, pigeons and rabbits with the vaccine. The blood of these animals did not show any of the usual immunity reactions. The immunity is stated to be acquired as a mass action without any incubation period.

All other vaccines passed into the intestines, except that of BESREDKA, failed to give any positive result.

J. H. T. W.

KABELÍK (J.) & FREUDMANN (S.). **Ueber den Einfluss von Salzen auf die Vibrionen der Cholera asiatica.** [Influence of Salts on *V. cholerae.*]—*Cent. f. Bakt.* 1. Abt. Orig. 1923. July 25. Vol. 90. No. 6. pp. 407–413. [3 refs.]

The authors felt that it was necessary to explain and reconcile the widely differing figures given by authors for the optimum NaCl content of satisfactory culture media for *V. cholerae.* They quote SIERAKOWSKI who gives 0·5 per cent. as the optimum, and BEAUVERIES who decided upon 3 per cent. NaCl as the optimum. Drs. Kabelík and Freudmann conclude, as the result of detailed experiments, that any difference in useful salt content is due to difference in alkalinity of the culture medium employed. For their experiments they used 2 per cent. peptone-water, ordinary bouillon, agar and gelatine. In each series of experiments the reaction of the medium was from weakly acid to strongly alkaline and the amount of NaCl added varied from 0–6 per cent. They give several detailed tables. They conclude that 3 per cent. is more useful than 0·5 per cent.; but that there is a standard relationship between the P_h of the culture medium and the optimum salt content for particular bacilli. Generally the greater the alkalinity, the lower is the optimum NaCl content.

J. H. T. W.

i. OYAMA (Seiichi). [**On the Diastatic Fermentation presented by the Group of Bacteria of *Vibrio cholerae* and on Cholera Red Reaction.**]—*Eisei. Densen.* Z. (*Jl. of Hyg. & Infect. Dis.*) Tokyo. 1921. Vol. 17. pp. 30–41. [Summarized in *Japan. Jl. Med. Sciences.* Tokyo. 1922. Vol. 1. No. 2. p. 171.]

ii. KAWAI (Nawoji). [**On the Efficacy of Hydrochloric Acid Cholera Vaccine.**]—*Ibid.* 1923. Jan. Vol. 18. Nos. 2 & 3. [Summarized in *Japan Med. World.* Tokyo. 1923. July 15. Vol. 3. No. 7. pp. 166–167.]

i. The group produces a strong diastatic ferment of use for identification. A more remarkable red reaction occurs in peptone water with starch than in normal peptone water. [*V.* this *Bulletin* Vol. 19. pp. 380–381 (KODAMA).]

ii. A vaccine for protection of animals prepared by mixing 0·136 per cent. HCl with the vibrio suspension, neutralized with normal caustic soda solution, gave as good results as a vaccine killed by heat.

J. H. T. W.

i. Nobechi (Keizo). **On Two Strains of Cholera Vibrio showing no Motillity.**—*Scientific Reports from Govt. Inst. for Infect. Dis.* Tokyo. 1922. Vol. 1. pp. 75–77. [6 refs.]

ii. —— & Ishikawa (Tomoji). **On the Cholera Strains encountered in Japan in 1921.**—*Ibid.* pp. 79–82. [6 refs.]

i. A well-known condition especially in old cultures.

ii. The authors state that the 12 strains examined reveal nothing new in microscopical, cultural or biological features. [*Cf.* this *Bulletin* Vol. 20. p. 739 (Shiiba & Ushijima).]

J. H. T. W.

Harada (Shiro). [**On Cholera Cases and Cholera Carriers.**]—*Jyuzenkw Z. Kanazawa.* 1921. Vol. 26. pp. 16–30.

——[**On Cholera Carrier and the Consistency of Cholera Feces together with the Duration of passing out Cholera Vibrios.**]—*Ibid.* pp. 298–315.

Nakadate (Kokichi). [**A Contribution to the Knowledge of Isolation of** *Vibrio Cholerae,* **with Special Reference to Cholera Carriers.**]—*Saikin Z. Tokyo.* 1921. pp. 219–226.

Nomura (Teiichi), Hokama (Gemcho) & Harada (Shiro). [**On the Cholera Epidemic in Osaka City in 1920.**]—*Eisei. Densen. Z.* Tokyo. 1921. Vol. 17. pp. 338–357.

Suzuki (Tsugiwo). [**On the Longevity of** *Vibrio cholerae* **attached to Silk when it is kept in a Dry Vessel.**]—*Ibid.* pp. 104–111.

Yamanouchi (Tatsuma). [**On the Agglutinability of** *Vibrio cholerae.*]—*Ni. Biseibutsu. Gak. Z.* Kyoto. 1921. Vol. 15. pp. 1–15.

[The preceding six papers are summarized in the *Japan. Jl. Med. Sciences.* Tokyo. 1922. Vol. 1. No. 2. pp. 169, 170 and 171].

ENTERIC FEVERS IN THE TROPICS.

MELNOTTE (P.). **Quelques observations d'affections typhoïdes chez les noirs.**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1923. May. Vol. 3. No. 2. pp. 146–150. With 1 chart. [1 ref.]

The author describes, in detail, 13 cases of enteric fever among natives of Senegal and other parts of the West Coast of Africa. They were treated in the hospital at Morocco. Besides the clinical evidence diagnosis was confirmed by the isolation of EBERTH'S bacillus in 12 cases and *B. paratyphosus* in 1 case. Eight patients died, including the case of paratyphoid, and it is important to note that at the autopsy of fatal cases several intestinal parasites were found. Case II.: Ascaris in the small intestine ; two small perforations in the ileo-caecal region. Case III.: *Ent. histolytica* and Tetramitus. Case V.: eggs of Ancylostoma and Trichocephalus. Case VI.: a *Taenia saginata*. From the etiological point of view it is recorded that all the patients had been less than one year in Morocco. Vaccination with anti-enteric vaccines is recommended in all cases where a native is transported to a new climate or to any region where typhoid is endemic [*cf.* DE LA COMBE].

J. H. Tull Walsh.

DE LA COMBE (Judet). **Note sur la fièvre typhoïde et la vaccination antityphoïdique chez les tirailleurs sénégalais en Algérie.**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1923. Jan.–Feb.–Mar.–Apr. Vol. 21. No. 1. pp. 77–81.

This paper is interesting because of the hypothesis with which it opens :—

Enteric fever has always been considered extremely rare among natives of West Africa, so much so that its occurrence was not admitted and a natural immunity implied. For this reason antityphoid vaccination was not carried out among native Senegalese troops.

Since our arrival in Algeria in May, 1919, up to July, 1921, the Senegalese troops of Algiers-Tunis, varying from 12 to 18 battalions, had not shown a single case of typhoid fever.

In July, 1921, 900 recruits from the Cameroon were added to the 136th battalion in Algiers and to the 15th regiment at Philippeville.

On the day of arrival at Philippeville (July 11) one man was admitted to hospital. He died on August 31 with sero-diagnostic proof of Para B infection. Up to September 5 there were five cases with two deaths, two giving Eberth's bacillus, one positive for Para A, one positive for Para B.

The sanitary condition of Philippeville was bad and there was an epidemic of typhoid among the civil population. Between July 21 and August 31, 191 cases were reported.

The detachment sent to the 136th, at Algiers, presented 8 cases with 3 deaths ; 6 gave blood cultures of *B. typhosus* and 2 blood cultures of Para. A. The civil population were suffering also.

J. H. T. W.

BESREDKA (A.). **L'expérience de La Flèche. A propos de la vaccination antityphique.**—*C. R. Soc. Biol.* 1923. July 7. Vol. 89. No. 24. pp. 366–367.

In an outbreak of typhoid fever at the military college, La Flèche (Sarthe), there were 43 cases with 2 deaths in ten days (April 8–18).

An Inspector General, sent to investigate, ordered anti-enteric vaccination. Two hundred and sixty-eight pupils were considered unfit subjects for subcutaneous inoculation and to these was given a bile-sensitized vaccine by the mouth on April 22, 23 and 24. Two hundred and fifty-three received a "T.A.B." vaccine subcutaneously on April 19 and 20. The epidemic continued until May 5 and 5 cases occurred in 11 days among the pupils who received buccal vaccination. Among the group inoculated 10 cases occurred during 20 days. All these cases were mild and no death occurred. The author concludes that: (1) "Vaccination by the mouth with a bile-vaccine is harmless and at least as efficacious as the subcutaneous vaccination."

J. H. T. W.

CORNWALL (J. W.). **The Possibility of Latent Infection with** *B. typhosus*.—*Indian Med. Gaz.* 1923. Aug. Vol. 58. No. 8. pp. 374–375.

Refers to a rabbit inoculated intravenously, Sept. 21, 1922, with 1/10 agar slope of *B. typhosus*. Six days later the bacillus was recovered from its heart blood. The animal gained weight and showed an agglutination titre varying from 1 in 10 and 1 in 280 to 1 in 1,280. After 34 weeks the animal sustained a fracture of the left femur and died a week later. Post-mortem examination showed that the heart's blood was sterile; but *B. typhosus* was found in the bile, jejunum, liver and spleen.

J. H. T. W.

PIJPER (Adrianus). **Widal versus Complement-Fixation.**—*S. African Med. Rec.* 1923. Feb. 10 & 24. Vol. 21. Nos. 3 & 4. pp. 51–62; 74–84. [64 refs.]

Dr. Pijper set himself: (1) to establish the diagnostic value of Widal's test in typhoid fever as seen in Pretoria; (2) to try and assign a cause for the frequently negative Widal in such cases; (3) to introduce a more satisfactory method for the serological diagnosis of typhoid fever. He investigated 120 cases and used 61 strains of typhoid bacilli isolated from them, as well as 5 more strains isolated from Pretoria patients on other occasions; one from a liver or gall bladder abscess; one isolated from surface water; and one obtained from the South African Institute for Medical Research, and also, besides this living material, suspensions of dead typhoid bacilli and allied bacteria series of which were obtained from the Standards Laboratory, Oxford, and from the Central Laboratory for Public Health, Utrecht.

Dr. Pijper concludes that Widal's test had better be discarded because its frequent failure can be ascribed only to inherent defects of the method which cannot be remedied.

The best way to prove typhoid infection is by recovery of typhoid bacilli from the patient, but difficulties met with in practice will always prevent general adoption of this method; moreover negative results of blood or urine culture would not exclude typhoid infection. This is especially the case with inoculated people and the isolation of typhoid bacilli from stools that are not quite fresh is a nearly impossible task.

In Dr. Pijper's hands the *Complement fixation test* proved to be a diagnostic method vastly superior to Widal's test. His table of results shows that complement fixation gave a positive result in numerous

instances where the Widal failed. Total number of samples tested 199; total number of "positives" 192 or 96 per cent. Out of the total 120 "first samples" taken from the 120 patients 115, or 96 per cent., proved positive. Out of the 120 patients only one was never positive with the complement fixation test. Sixty controls were performed on blood samples from cases suffering from all sorts of affections—there were no positives. Comparison of results with Widal and C.F.T. gives some support to the view that agglutinins denote "protection" while sensitizers are evidence of "infection." The strength of the C.F.T. in typhoid does not allow of any conclusions as regards condition of patient or prognosis. The fixation of complement as occurring in some sera is a transient phenomenon, and unless special precautions are taken it is easily missed even by an otherwise very competent observer.

The author discusses very fully the preparation of antigen and under the headings (1) *Preparation of haemolytic system*; (2) *Titration of antigen*; (3) *The test proper, including reading of results*, he gives a complete and careful description of his technique, which is not susceptible of any useful summary and therefore must be sought in the original paper.

Forty persons who had been inoculated against typhoid were subjected to a C.F. test at the same time. Results were negative in 35: of the other 5 who were positive, 3 gave a history of having had typhoid fever. Further research on this matter is necessary.

The following are the formal conclusions of a paper which bears clear and detailed witness of the high standard of technical precision and the exacting controls set and rigidly adhered to:—

1. Widal's is an unsatisfactory method for diagnosing typhoid fever in Pretoria, for it is very often repeatedly negative in undoubted cases of typhoid fever.

2. Pretorian typhoid does not in any respect differ from ordinary typhoid.

3. Paratyphoid is practically non-existent in Pretoria.

4. The bacillus which causes typhoid fever in Pretoria cannot be differentiated from the bacillus that causes typhoid elsewhere.

The failure of Widal's test in Pretoria (5) cannot be due to a peculiarity of the causative microbe; (6) cannot be ascribed to climatological influences; (7) cannot be traced to the race, mode of life, or diet of the patients; (8) is not due to faulty "technique"; (9) does not constitute an exception to the rule.

10. The value of Widal's test is lowered by the fact that prophylactic inoculation against typhoid produces agglutinins which persist for long periods and may be increased by a non-typhoid infection.

11. There are no simple substitutes for Widal's test.

12. Specific C.F.T. can be made a very satisfactory diagnostic method for typhoid.

13. It has repeatedly been observed that a C.F.T. in typhoid fever gave a positive result at a period when the Widal was still negative.

14. Prophylactically inoculated people do not, as a rule, possess specific amboceptors—at least not for long after the last inoculation—and for such persons a specific C.F.T. would appear to be much more satisfactory than the Widal.

15. Widal's reaction ought to be replaced by specific complement fixation tests.

H. M. Hanschell.

LUNG (Y. Y.) & FOSTER (J. H.). **Typhoid and Para-Typhoid Fever in Changsha.** —*Nat. Med. Jl. China.* 1923. Sept. Vol. 9. No. 3. pp. 185–197. With 2 charts in text. [2 refs.]

NATIVE DIETARIES.

JOLLY (G. G.). **The Use of Germinated Pulse and Beans in the Natural Dietary of the Burmese.**—*Indian Med. Gaz.* 1923. June. Vol. 58. No. 6. pp. 255–257.

The importance of germinated pulse as a supply of vitamins B and C is brought to the notice of tropical workers. This product is on sale in the bazaars in many parts of India and Burma and is regarded as a highly palatable food. Various species of pulses and beans, with their respective vitamin values, are described.

The pulse or bean is first washed and then immersed in water for 12-24 hours. The resulting product is placed in baskets or porous pots or spread upon a moist mat or sprinkled upon a layer of soil or sand. "A shoot appears on the second day and germination is allowed to continue for two or three days, according to the kind of pulse used and the size of shoot desired."

The author states, "the question of the inclusion of germinated pulse in the dietary of sailors and soldiers, police and other bodies of public servants in receipt of rations, and in institutions, such as hospitals, jails, schools and asylums is, in my opinion, one of considerable importance."

A. D. Bigland.

WILLE (W. A.). **Xerophthalmia. A Deficiency Disease (Avitaminosis).**—*Trans. 4th Congress of the Far Eastern Assoc. of Trop. Med.* 1921. Vol. 1. pp. 245–257. With 4 plates.

The following points, interesting from a tropical dietetic point of view, are worthy of note.

Xerophthalmia may occur in institutions the dietary arrangements of which are apparently excellent. The reason for this is that in the Dutch East Indies coco-nut oil is the chief fatty substance employed and this does not contain the fat-soluble A vitamin.

Not only cod-liver oil but also ox-liver is of great service in protecting the community against xerophthalmia. The author advises that 100 grams of ox-liver three times a week in place of meat should be given to each person in those institutions where the disease is likely to occur.

A. D. B.

OSBORNE (Thomas B.) & MENDEL (Lafayette B.), with the Co-operation of CANNON (Helen C.). **Eggs as a Source of Vitamin B.**—*Jl. Amer. Med. Assoc.* 1923. Feb. 3. Vol. 80. No. 5. pp. 302–303.

By extracting egg yolk with water it was found that a product comparatively rich in vitamin B was obtained. Eggs are not exceptionally rich in this vitamin; the average sized hen's egg is equivalent in vitamin B potency to about 150 cc. (5 oz.) of cow's milk.

A. D. B.

i. Cramer (W.). **On the Mode of Action of Vitamins.**—*Lancet.* 1923. May 26. pp. 1046-1050. With 6 text figs. [9 refs.]
ii. ——. **On Vitamin Underfeeding.**—*Brit. Jl. Experim. Path.* 1922. Vol. 3. No. 6. pp. 298–306. With 1 fig.

i. The author, while agreeing that every highly organized animal requires vitamins and without them death will occur, does not accept the common view that every cell in the body has these requirements. He advances the following arguments in support of his contention : 1. In vitamin starvation the adrenal gland hypertrophies, which would appear to indicate that for these cells, at any rate, vitamins are not necessary. 2. Drew has shown that mammalian cells can be grown in a saline medium for an indefinite time in the presence of a watery extract of the embryo. This extract is not particularly rich in vitamins and similar cell growth cannot be obtained with yeast extract. 3. Yeast cells can synthetize vitamin B and plant cells can do the same for vitamin A. 4. The curative effect of light in rickets suggests that certain cells can synthetize vitamin A under this influence and pass it on to the rest of the body. 5. In avitaminosis definite lesions occur in certain tissues ; thus there is atrophy of lymphoid tissues with resulting marasmus in vitamin B deficiency, while in vitamin A starvation there is thrombopenia and increased susceptibility to infection.

ii. The author does not agree that the action of vitamins is a purely negative one ; he produces evidence to show that vitamins do exert a positive action, namely a stimulation of the digestive and assimilative processes and he regards them, therefore, as " food hormones."

A. D. B.

Coward (Katharine H.) & Clark (A. J.). **The Vitamin Content of Certain Proprietary Preparations.**—*Brit. Med. Jl.* 1923. Jan. 6. pp. 13–15. With 1 chart in text.

These authors have done very important work upon the vitamin content of certain proprietary preparations now on the market, viz., metagen, maltoline, roboleine, virol, vitmar and Mellin's food. Great claims are made for the vitamin efficiency of these products and the following results will be of wide interest :—

In none of the cases examined have the manufacturers succeeded in concentrating vitamins on the commercial scale. This result was only to be expected, for the concentration of the two more stable vitamins (A & B) is a process of the greatest difficulty even on a laboratory scale, and in the case of the successful attempts the final yield of purified vitamin only represents a minute fraction of the total quantity of vitamins present in the raw material." Also " under normal conditions of life an adequate supply of vitamins can be easily ensured by including in the diet a suitable amount of protective foods, such as milk, butter, green vegetables and fruit and no advantage is to be gained by trying to obtain these substances in the form of drugs."

A. D. B.

Lopez-Lomba (J.). **Modifications pondérales des organes chez le Pigeon au cours de l'avitaminose B.**—*C.R. Acad. Sci.* Paris. 1923. May 14. Vol. 176. No. 20. pp. 1417–1419. With 1 fig.

By observing a series of pigeons fed upon a vitamin-free diet and killing one of the birds each day the authors have shown that avitaminosis can be divided into four stages.

1. A period of incubation which lasts about nine days in which practically no signs are present except that certain organs begin to show slight alterations in weight.

2. *Ninth to fourteenth day* (about); thyroid, heart, spleen, and thymus hypertrophy, adrenals and pancreas atrophy. The animals pass through a toxic stage and some may die.

3. *Fourteenth to twenty-third day* (about); the thyroid returns to normal, while the adrenal begins to hypertrophy; spleen, liver, thymus and pancreas atrophy and the testicle becomes markedly hypertrophied.

4. *From the twenty-third day onwards* the adrenal gland rapidly hypertrophies, the pancreas continues to lose weight, the thyroid and heart atrophy, symptoms of paralysis begin.

A. D. B.

Mouriquand (G.), Rochaix (A.) & Michel (Paul). **Carence et infections expérimentales aiguës du cobaye.**—*C.R. Soc. Biol.* 1923. June 23. Vol. 89. No. 22. pp. 247–249. [4 refs.]

These authors conducted experiments to ascertain the effects of infection on starved animals. Forty guinea-pigs were fed on a diet of barley and hay. By the twenty-first day all presented typical signs of scurvy. The animals were then divided into four groups of ten each; one group was allowed to continue upon the deficient diet, the other three groups were inoculated with anthrax, diphtheria and *B. pyocyaneus* respectively. Normally-fed guinea-pigs were used as controls. It was found that diphtheria infection was not influenced by scorbutic starvation whereas in the cases of anthrax and *B. pyocyaneous* the signs of infection were more serious and more extensive in the controls than they were in the scorbutic animals.

A. D. B.

Abel (E.). **Remarques à propos de quelques expériences d'avitaminose.**—*C.R. Soc. Biol.* 1922. Dec. 9. Vol. 87. No. 37. pp. 1213–1215.

That previous dietary conditions play some part with regard to the vitamin needs of the body is shown.

Young birds just hatched from the egg are less resistant to vitamin starvation than are older birds who have lived upon a normal diet for a time.

A. D. B.

Collazo (J. A.). **Vergleichende Untersuchungen ueber die Assimilationsfähigkeit der Zellen bei der Avitaminose und nach dem Hungerzustande.** [Capacity for Assimilation of Cells in Avitaminosis and Starvation. Comparative Studies.]—*Deut. Med. Woch.* 1923. Jan. 26. Vol. 49. No. 4. pp. 110–111. With 5 text figs. [9 refs.]

This author points out the importance of dietary conditions previous to the inception of avitaminotic experiments. The starving body, having nothing to assimilate, apparently keeps its store of vitamins intact. If then such a starved body be fed upon a diet containing no vitamins at all it will gain weight for a time, that is until the supply of vitamins already in the body is exhausted.

If the meat and offal of starved animals be added to the diet of an animal suffering from avitaminosis it will be found that the animal's weight either remains stationary or increases, whereas if the meat and offal of avitaminosed animals be added the loss of weight continues as before.

A. D. B.

McCarrison (Robert). **Pathogenesis of Deficiency Disease. No. XI. Observations on Fat-Excess in Relation to Iodine Requirements and to the Thyroid Gland.**—*Indian Jl. Med. Res.* 1923. July. Vol. 11. No. 1. pp. 1–51. With 45 figs. [3 refs.]

This paper deals with observations on fat excess in relation to iodine requirements and to the thyroid gland. The author made use of tadpoles and pigeons for this purpose. The experiments with the former are perhaps not of sufficient general interest to warrant their discussion.

In the case of the pigeons it was found that these birds confined in cages which had become grossly contaminated by excreta were very liable to thyroid enlargement. That this was not due to lack of exercise but to contamination of the bird's food and drink was shown by the fact that it could be prevented by scrupulous cleanliness and to a certain extent by the administration of chlorine water. It was also shown that this thyroid enlargement was not connected with inadequate supply of iodine in the food but rather to inadequate utilization of that substance consequent upon the gastro-intestinal infection resulting from the dirty cages. Experiments are described showing that excess of butter or oleic acid in the food may increase the goitre-producing action of the insanitary conditions and that this also is related in some way to bacterial changes in the digestive tract. It is most interesting to note that cod liver oil gives complete protection against thyroid enlargement due to this cause.

A. D. B.

Juniper (A. B.). [**Native Dietary on Niue Island (Cook Islands).**]—*Jl. Home Econ.* 1922. Vol. 14. No. 12. pp. 612–614. [Summarized in *Experim. Station Rec.* 1923. June 26. Vol. 48. No. 9. p. 859.]

MISCELLANEOUS.

HAMERTON (A. E.). **The Establishment of an Antirabic Institute in the Tropics.**—*Proc. Roy. Soc. Med.* (Sect. Trop. Dis. & Parasit.) 1923. Aug. Vol. 16. No. 10. pp. 49–55. [4 refs.]

The author describes in detail the manufacture of SEMPLE's carbolized antirabic vaccine, as being a safe and efficient preparation which any competent bacteriologist can make and use with the furniture of his laboratory. Glycerinated virus is admirable for temperate latitudes, but in the tropics—or, at least, in the author's Mesopotamian experience —there is difficulty about sterile glycerine in a dusty town, and contact with glycerine kills the virus rapidly and so might impair the potency of the vaccine. During the last six months of 1921, 137 patients were treated at the Bagdad Central Laboratory by carbolized vaccine and no case of hydrophobia occurred, nor were there any unpleasant after-effects.

Other items of the author's Mesopotamian experience of rabies were noticed in this *Bulletin*, Vol. 20, p. 602.

A. Alcock.

HORNUS (P.). **Rapport sur le fonctionnement de l'Institut Antirabique, de l'Institut Vaccinogène et du Laboratoire de Bactériologie de Rabat pendant l'année 1922.**—*Arch. Inst. Pasteur de Tunis.* 1923. July. Vol. 12. No. 2. pp. 259–266.

The number of persons treated during 1922 was 521 ; the injuries had been inflicted in 473 cases by dog, in 17 by cat, in 2 by cow, in 1 by a horse, in 1 by a ferret, and in 27 cases by man ; in 25 cases the rabidity of the assailant was confirmed by experiment, and in 156 cases by clinical diagnosis ; in the remaining 340 cases rabies was merely suspected ; in 7 of the cases of confirmed rabidity the animal (dog) had been running loose. Of the 521 treatments only one was unsuccessful. The method of treatment was by cords of 4, 3, 2, 1 days' desiccation, 3–6 cc. of emulsion being injected once or twice a day according to the severity of the bite : the term of treatment, which was well borne, varied from 10 to 25 days.

A. A.

ARCHIVES DES INSTITUTS PASTEUR DE L'AFRIQUE DU NORD. 1923. Feb. Vol. 3. No. 1. pp. 99–117.—**Fonctionnement des services de l'Institut Pasteur de Tunis pendant l'année 1922.**

In his account of the antirabic service the writer, as before, strongly condemns the laxness of the natives and authorities of Tunis in the administration of the laws for the control of rabies (this *Bulletin*, Vol. 20, p. 33). In this year, moreover, nine persons or groups of persons were treated who had been contaminated by men attacked with rabies and untreated. The usual statistics and tables of analyses are given.

A. G. B.

Téodorasco (C.). **Renforcement avec raccourcissment de l'immunisation antirabique par injections sous-cutanées et intraveineuses combinées.**—*C. R. Soc. Biol.* 1923. May 12. Vol. 88. No. 16. pp. 1235–1236.

After discussing from an experimental basis the reasons why antirabic treatment, by whatsoever method, is inefficacious for certain badly bitten patients, the author, writing from the Hygiene Laboratory of Chisinäu (Bessarabia), describes a procedure by which patients to the number of 45, very badly bitten about the head, and in nine instances by a wolf, have been treated without the intercurrence of any accident and with success confirmed by time. The procedure, of which the technique is to be hereafter described, consists in intravenous injections for seven days and subcutaneous injections for 13 days being carried on concurrently.

A. A.

Harvey (W. F.) & Acton (H. W.). **An Examination into the Degree of Efficacy of Anti-Rabic Treatment.**—*Indian Jl. Med. Res.* 1923. Apr. Vol. 10. No. 4. pp. 1020–1077. [41 refs.]

The authors mark the contradictory statements made regarding the results of particular modifications of experimental antirabic treatment, and they ascribe them to errors in technique, difficulties of exact diagnosis, the use sometimes of fixed virus in other cases street virus, the use of different animals and of different methods of inoculation, and to the differing aims and purposes of the experiment; all these things are fully and fairly discussed. Their own experiments appear to them to justify the following opinions: that between street virus and fixed virus there is no such essential difference—though differentiation due to mode and upkeep of fixed virus is allowed—as seems to be postulated by the theory of antirabic inoculation; that living fixed virus, although very rarely infective, may not be wholly innocuous to man; that the foreign nerve material necessarily inoculated with virus is possibly the cause of the neuro-paralytic accident and, therefore, that in the process of dead virus immunization an inoculation may be non-infective without necessarily being innocuous; that normal brain substance seems to render the recipient more sensitive to infection by rabies virus than no treatment at all; and that antirabic serum will neutralize—whether specifically or not being left an open question—rabies virus in vitro whether it be produced from an animal intensively treated with fixed virus or with normal brain. Assuming sub-dural inoculation to be too severe a test of immunity the authors experimented with an intramuscular test, and their experiments showed for fixed virus immunization a distinct advantage over no treatment and an advantage over street virus, and a disadvantage in normal brain immunization compared with no immunization at all. Experiment also showed that dead fixed virus gives protective results as good as or better than immunization either by dried cord (Pasteur) or by diluted fixed virus (Hoegyes).

The authors emphasize the outstanding fact that some protection from infection is afforded by the use of rabies virus in subcutaneous inoculations. Both their statistical observations in man and their experiments show that carbolized vaccine gives as good results as either dried cord treatment. Their statistical investigations further

show that legislation is highly effective in reducing mortality from rabies, and they think that a thorough campaign against the animals that transmit the infection is the way to eradicate infection.

A. A.

Remlinger (P.). **Les microbes des moëlles rabiques.**—*Arch. Instituts Pasteur de l'Afrique du Nord.* 1923. May. Vol. 3. No. 2. pp. 119–123. [4 refs.]

The author has studied the nature and origin of the microbes responsible for the accidents—inflammation, induration, abscess—that often occur at the site of inoculation in antirabic treatment. He gives here an account of his work, from which he appears to conclude—for his argument is not very clearly expressed—that the source of these microbes (which include staphylococcus of several kinds, streptococcus, bacillus coli, proteus, etc.), is not carelessness in removal of cords and preparation of emulsions, but the cords themselves, particularly cords taken from dying or dead animals. Rabbits used for passage of virus should be fed so as to avoid diarrhoea, and the animals should not be too young. They should die in the cold chamber, or should be killed—in summer at any rate—24, or even 48, hours before the anticipated moment of death. Cords that appear at all soft when extracted should not be used in antirabic treatment.

A. A.

Remlinger (P.), Leger (Marcel) & Teppaz. **Contribution à l'étude de la Rage au Sénégal.**—*Bull. Soc. Path. Exot.* 1923. Jan. 10. Vol. 16. No. 1. pp. 4–6.

Record of experiments proving (*a*) that the fixed virus of the Pasteur Institute of Paris has exactly the same fatal effect on laboratory animals (rabbits and guinea-pigs) in Dakar (Senegal) as it has in Tangier (Morocco) and in Paris ; (*b*) that street virus of Morocco has the same fatal effect on laboratory animals in Senegal as it has in Morocco ; and (*c*) that street virus of Senegal has the same uniformly fatal effect on laboratory animals in Morocco as street virus of Paris. If, therefore, in Senegal there be, as some think and as Heckenroth's recently-published experiments appear to suggest, two kinds of street virus—of which one is of extraneous and imported origin, while the other is of indigenous origin and not capable of transmission to man by dog-bite—the present authors have not yet encountered the latter although they intend to continue their search for it.

A. A.

Robert (Léopold). **Accidents paralytiques et hyperesthésie cutanée (rage atténuée) au cours du traitement antirabique. Guérison.**—*Bull. Soc. Path. Exot.* 1923. June 13. Vol. 16. No. 6. pp. 417–422. [5 refs.]

In declared rabies in man the whole nervous system is involved, so that contrary to accepted opinion, sensory are as constant as psychic and bulbar disturbances. The author has already drawn attention to itching as one of the most constant premonitory and persistent symptoms of confirmed rabies and has since verified the constancy of this symptom in 14 cases. On the other hand, in the course of anti-rabic treatment though paralytic accidents may occur they have never, in the author's experience, been associated with sensory troubles.

The author therefore reports at considerable length a case under antirabic treatment where paralysis (of the bladder, rectum, and legs) was concurrent with intolerable itching, and he offers an explanation of the phenomenon in harmony with his views: it is the first case of serious paralysis observed by him in the course of nearly ten years experience embracing more than 1,300 treatments under uniform therapeutic conditions.

The patient, an American clergyman of 42 years, was, on January 7 bitten in the left leg, and he thought no more of it until, more than a week afterwards, he received a summons to appear for treatment as the dog had gone mad and bitten other people. In a state of intense excitement he appeared for treatment, which was begun on the 13th day after he was bitten (January 20). After the sixth injection he complained of headache, fever, and stiffness, and the site of the injections was marked by a large patch of erythema. Treatment was continued to the twelfth injection, although the symptoms persisted. The day after the twelfth injection (February 1) he was in a state of fever and intense excitement; backache and pains in other parts made movement a penance; the bladder and rectum were paralysed and the legs rigid; the arms were continuously tremulous, and there was an exquisitely acute burning sensation spreading over belly and chest from the site of the inoculations. This state persisted until February 6, when the burning sensation became an intolerable itching. By February 9 the fever had gone and the other symptoms were slightly ameliorated, except the itching, which had spread symmetrically to the arms and the back. On February 10 all the symptoms were in course of disappearance and the nervous excitement was subsiding. On February 16 the patient went home, weak and depressed, but otherwise fairly well. The latest news, more than five months after the biting, is that he is in excellent health.

The patient had no history of hysteria or alcoholism, or of anything but malaria and an emotional disposition, that is to say of a peculiar susceptibility of the whole nervous system. The case emphatically is not one of mild rabies of canine origin: the incubation was too short and there was no hyperaesthesia at the site of the bite. The succession of symptoms—first erythema at the site of inoculation, then a burning sensation, and then itching spreading from the same site—and the concurrent evolution of these with motor and sensory inhibitions giving rise to paralyses, prove it to be a case of attenuated rabies due to antirabic inoculation, the alien nerve substance of the inoculations accounting for the paralyses, in a particularly susceptible person.

In a disease, like rabies, so full of obscurities, observations should, in the author's opinion, be multiplied and recorded.

A. A.

LEGER (André). **Modifications hématologiques et image d'Arneth dans la rage humaine et chez les individus soumis au traitement antirabique.**—*C. R. Soc. Biol.* 1923. May 12. Vol. 88. No. 16. pp. 1194–1196. [4 refs.]

The author makes some comparison of the blood of six patients suffering from confirmed rabies and 25 patients acquiring immunity under antirabic treatment: in the former the Arneth index was deviated to the right, in the latter to the left. His rabid patients were Annamites who were not treated, and died: in their blood the mean percentage of neutrophile polynuclears was 80, and in every one of the six cases the number of nuclear lobules in 100 neutrophile polynuclears was more than 400. His patients under treatment went

through a course of 20 inoculations from cords of progressive virulence, and in each case the blood was examined once before treatment, again on the tenth day of treatment, and a third time after the last inoculation : in these cases the percentage of neutrophile polynuclears was diminished (nor was there any " labrocytosis " ? turbulence of their nuclei) on the tenth day but was tending to normal at the final examination. In two cases, up to the present, an observation of the blood has been made some time after treatment : in one of these there was still, at the end of seven months, an Arneth deviation to the left ; in the other, at the end of a year, the Arneth index was normal.

A. A.

DUMITRESCO-MANTE. **Phénomènes rabiques mortels survenus trois ans après la morsure chez un vacciné.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1923. Apr. 19. Year 39. 3rd Ser. Vol. 47. No. 12. • pp. 542–545. [8 refs.]

After recounting a number of cases where the incubation period of rabies was reported to be prolonged in an extraordinary degree and the individual writers who severally authenticated them, the author gives his own experience of a case where rabies supervened three years after infliction of a rabid-dog-bite which had been immediately treated by anti-rabic vaccination.

On April 4, 1918, the sufferer in this case, a porter, 38 years of age, was bitten, not extensively but rather deeply, on the dorsum of the right hand, by a dog known by Dr. BOPP of the Babes Antirabic Institute at Bucharest to be rabid. He was brought to the said Institute and underwent the anti-rabic treatment there in vogue, receiving during 17 days four series of two daily injections of 5 cc. of vaccine. After treatment he was not heard of again until the April 16, 1921, when he went to the Brancovan hospital at Bucharest with obvious and typical symptoms of rabies. He was lucid enough then to declare that he had not been bitten by any suspect animal since his accident in 1918, and this assertion was confirmed by his friends. The next day, after a phase of extraordinary excitement, he died in coma and paralysis. Neither Negri bodies nor Babes' nodules could be detected post mortem.

A. A.

COLLIN (L.). **Sur les maladies vénériennes dans la garnison de Tananarive.**—*Bull. Soc. Path. Exot.* 1923. July 11. Vol. 16. No. 7. pp. 534–539.

The prevalence of venereal disease in Madagascar is astounding, not only among the troops but even more among the native population. The indifference of the natives to syphilis is amazing ; in the 11 years 1909-1920, a third of the population appears to have come under observation for syphilitic affections, and in 1920 no less than 43-49 per cent. of the native mortality was attributed to syphilis more or less complicated with malaria. The explanation is to be found in the peculiar institutions of the country, where prostitution is disgraceful, but cohabitation—which if not mutually satisfactory may be discontinued without impropriety—is the recognized preliminary to betrothal. As there are no professional improper females, prostitution for the troops is clandestine, and prophylaxis therefore depends upon

"educative" measures and "personal hygiene," though no one dares to risk his reputation by giving official countenance to personal hygiene. The formula for a useful prophylactic ointment is given.

A. A.

King (M. R.). **Incidence of Venereal Diseases among American Seamen in the Orient.**—*Public Health Rep.* 1923. June 29. Vol. 38. No. 26. pp. 1477–1480. With 1 chart. [1 ref.]

It is shown by table and by graph that two-thirds of the American seamen treated as out-patients or in hospital at Manila are suffering from venereal disease. Allowance being made for the early stage of many of the cases, chancroid is unusually prevalent; instead of the usual 2·6 per cent. of chancroid and 51·1 of syphilis, we have 12.3 per cent. syphilis and 30·3 chancroid. The author attributes the extent of venereal disease at Manila to unrestricted prostitution at other ports of the Orient and the predominance of chancroid to the personal filthiness which prevails at those ports.

A. G. B.

Lennox (William G.). **Neurosyphilis among the Chinese with Findings in Sixty-Five Cases.**—*China Med. Jl.* 1923. Aug. Vol. 37. No. 8. pp. 663–671. [19 refs.]

To secure statistical information on the prevalence of syphilis among the Chinese the author obtained reports from 15 hospitals and, for comparison, from 9 hospitals in America. The figures for in-patients showed syphilis to be more than three times as frequent among the Chinese, and for out-patients about twice as frequent. Wassermann tests on Chinese in-patients show 24 per cent. positives in one series and 39 in another; the corresponding figure for Americans is 10 to 30. On the other hand neurosyphilis is comparatively rare among the Chinese and the same hospital statistics show that affection of the central nervous system is seven or eight times more frequent in America. There are at least five explanations of this apparent racial discrimination, affecting the black as well as the yellow peoples:—

1. A specific strain of parasite among coloured races which spares the central nervous system.
2. The nervous system of the coloured races is less susceptible to syphilitic infection than the white.
3. Syphilis is a lately acquired affection and has not yet reached the attenuated form in which damage to the nervous system is common (not valid for the Chinese who have had syphilis with them for hundreds of years).
4. The coloured races have not been subject to modern antisyphilitic treatment which leaves the spironema no lurking place but the central nervous system.
5. The low incidence may be more apparent than real. Such diagnoses in America are based on examination of the spinal fluid as well as symptoms, in China on signs and symptoms alone. That this factor must be considered is shown by the statement that the incidence of neurosyphilis among syphilitic patients at the Peking Union Medical College is about six times as high as reported by the fourteen other Chinese hospitals; here there is a special syphilis clinic. This, however, will not account for all the observed racial differences.

Table 3.—Incidence of Various Forms of Neurosyphilis among Hospital In-patients in China and America.

General Hospitals.	Number and Percentage of Cases.			
	General Paresis.	Tabes Dorsalis.	Cerebro-spinal.	Lesions of Vascular Origin.
China	5 (3%)	51 (34%)	55 (37%)	39 (26%)
America ..	481 (48%)	299 (39%)	223 (22%)	—

Of the 26 per cent. with "lesions of vascular origin," 6 out of 7 present a paraplegia due to transverse myelitis of the cord.

The principal findings in 65 cases of neurosyphilis seen at Peking are recorded.

A. G. B.

MENGERT-PRESSER (Hilde). **A Case of General Paralysis with a Chinaman.**—*Meded. Burgerlijk. Geneesk. Dienst in Nederl.-Indië.* 1923. Pt. 2. pp. 189–191. [4 refs.]

The patient in this case was a man of 36 and lately an opium consumer. His signs, symptoms, and serological reactions are described; the delusions, allowing for Oriental colouring, were quite characteristic. His condition is inferred to have existed for about six months before he was admitted, and he died about six weeks afterwards. Post-mortem the cerebral convolutions were atrophic, the pia mater being thickened and in places adherent; sections showed spirochaetes—"exactly similar to *Spirochaeta pallida* Schaudinn"—scattered among the atrophic ganglion cells, not grouped around vessels. The clinical diagnosis was further confirmed by the observation of perivascular infiltrates showing the ammonium potassium sulphide ferrocyanide reaction.

A. A.

MCDANIEL (F. L.). **The Incidence of Neurosyphilis in Treated Cases on the Island of St. Croix, Virgin Islands of the United States.**—*U.S. Nav. Med. Bull.* 1923. Sept. Vol. 19. No. 3. pp. 343–345. [3 refs.]

Treatment for syphilis has been compulsory in St. Croix since 1906 and complete case histories are available from 1918. The patients receive three intravenous injections of arsphenamine (0·3, 0·6, 0·6 gm.) and 12 intramuscular injections of salicylate of mercury given at weekly intervals (0·5, 1, 1·5, 2, 2 . . . . 2 grains). A blood Wassermann is then done and, if negative, repeated after three months. If positive, a second course of treatment is given and so on. No patient is discharged as cured till he is free from evidence of the disease and four successive blood Wassermanns have been negative.

The author induced 100 patients to return for re-examination [after what intervals is not stated]. All had been treated at the secondary

stage. All were negroes, 52 men and 48 women, average age 45. A neurological examination was made and a spinal fluid Wassermann. The spinal fluids of 16 (8 men and 8 women) gave a positive reaction; 12 of these had definite clinical symptoms of neurosyphilis. Of the 16, 9 had received one course, 5 two, 1 three and 1 four. These results are interesting because many authorities state that the negro race is peculiarly immune to syphilitic attacks upon the nervous system.

A. G. B.

THIROUX (A.). **Le tabès chez les indigènes dans les colonies françaises.**—*Bull. Soc. Path. Exot.* 1923. July. 11. Vol. 16. No. 7. pp. 475–476. [4 refs.]

The author protests against the preconception that the black races are by nature exempt from tabes. In the venereal dispensaries at Tananarive in Madagascar six cases were observed in 1921–1922.

A. A.

LE DENTU (R.). **Les sels d'arsenic en injection intraveineuse chez les indigènes. Guérison rapide dans un cas d'hémiplégie syphilitique.**—*Bull. Soc. Path. Exot.* 1923. June 13. Vol. 16. No. 6. pp. 430–433.

Case of a Malagasy aged 26, who had had a stroke in the night; there was complete right hemiplegia, left facial paralysis and paresis of the tongue. He received at once novarsenobenzol, 0·3 gm. intravenously, and after some improvement 0·45 gm. on the fifth day. After two weeks he was sitting up, and a week later walking about. He received further doses of 0·6 and 0·9 gm., in all 2·25 gm. in a month. MILIAN is quoted on the necessity of prompt treatment in such cases to re-establish the lumen of the vessel and ward off endarteritis obliterans and mortification of tissue. The author has been giving intravenous injections of arsenobenzol and 914 for 15 years with no accidents and uniformly good results and is not disposed to abandon arsenic in favour of bismuth.

A. G. B.

SCHAEFFER (H.). **Méningite syphilitique tertiaire avec accidents fébriles à type pseudo-palustre.**—*Presse Méd.* 1923. Sept. 8. Vol. 31. No. 72. pp. 772–773. With 1 fig. [2 refs.]

The patient in this case, a man of 29 years, displayed all the symptoms and signs of meningitis. On the 19th, 21st and 23rd days of his illness he had what resembled typical ague-fits—shivers succeeded by fever and profuse sweating, and a rise of temperature to about 104° F.—but the microscopic examination of his blood revealed nothing abnormal. On the 26th day of his illness the cerebro-spinal fluid, which heretofore had been negative, gave a positive Bordet-Wassermann reaction. A course of intravenous injections of novarsenol then brought about rapid amelioration. The author remarks that although apyrexia is supposed to be the rule in tertiary syphilis, pyrexia occurs often enough to perplex diagnosis.

A. A.

FRAISSINET & MARTIN. **Syphilis pulmonaire simulant la tuberculose cavitaire chez un Malgache.**—*Bull. Soc. Path. Exot.* 1923. June 13. Vol. 16. No. 6. pp. 396–398.

The patient, a Malagasy soldier of weight 52 kilos, had all the signs of advanced pulmonary tuberculosis, with pleurisy and signs of cavitation of the right lung. He had also general slight enlargement of glands and hyperkeratosic syphilides on hands and feet. The case was one of syphilis plus tuberculosis or syphilis alone. Between January 27 and February 26 he received intravenous injections of novarsenobenzol and cyanide of mercury, intramuscular injections of biniodide of mercury, and iodide of potassium by mouth. The Wassermann reaction on February 1 was strongly positive. Tubercle bacilli could never be found in the sputa, and a guineapig inoculated on February 10 did not develop tuberculous lesions. The specific treatment led to a "veritable resurrection" of the patient, who left the hospital on May 15 weighing 66 kilos and with lung signs nearly cleared up.

A. G. B.

SARKAR (Sarasi Lal). **Lethality of Cinchona Derivatives on *Bacillus typhosus* and a Variety of Flagellate.**—*Calcutta Med. Jl.* 1923. Apr. Vol. 17. No. 10. pp. 162–164.

In experiments with an undetermined flagellate the observed minimum dilutions for preventing growth were as follows: optochin, 1 in 1,600; hydroquinine hydrochlor., 1 in 1,200; cinchona sulphate, 1 in 1,200; quinine hydrochlor., 1 in 800; quinine sulphate, 1 in 800; cinchonidine sulphate, 1 in 600.

In experiments with *Bacillus typhosus* 5 drops of a 24-hours broth culture of the bacillus was mixed with 5 cc. of a solution (in definite strength) of the given drug, after several intervals of 2½, 5, and 7½ minutes the several mixtures were inoculated into sterile broths, and at the end of 24 hours the individual results were investigated by the Rideal-Walker test. The results of the R.-W. test are tabulated as follows: optochin "·4"; hydroquinine hydrochlor., 1; cinchona sulphate, 0·5; quinine hydrochlor., 0·5; quinine sulphate, 0·5; cinchonidine sulphate, 0·3.

A. A.

AKASHI (M.). **Ueber die Chininspeicherung der roten Blutkörperchen in vitro.** [Quinine Storage in the Red Corpuscles in vitro.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. Feb. Vol. 27. No. 1. pp. 12–30. [13 refs.]

The author gives an account of the researches of MORGENROTH [see this *Bulletin*, Vol. 13, p. 81], GIEMSA & HALBERKANN, SCHNABEL, RONA & BLOCH [all German authors] on this subject. From his own experiments, for the details of which the paper must be seen, he draws the following conclusions:—

1. The storage of quinine by the red cells *in vitro* can be shown by analytical quantitative methods with the use of blood from horses, rabbits, and cattle. (2) The amount of quinine stored varies with the concentration of the alkaloid, the number of blood cells and the temperature. (3) The quinine taken up by the cells at the highest possible concentration is given off later to the surrounding fluid owing to alterations in the cell membrane, with the production of haemolysis. (4) In the presence of much carbonic acid the red cells do not store up quinine. (5) The liver cells behave in vitro like the red cells. (6) Quinine accumulates in the kidneys and lungs.

(7) Experiments with the living animal do not show corresponding results, so that it must remain uncertain whether quinine is stored up by the erythrocytes and organ cells *in vivo*.

A. G. B.

BOECKER (Eduard). **Ueber die Verteilung der Chinaalkaloide im Säugetierorganismus.** [The Distribution of the Cinchona Alkaloids in the Animal Organism.]—Reprinted from *Biochem. Ztschr.* 1922. Vol. 130. No. 1–3. pp. 312–320. [6 refs.]

The author proposed to himself the question : does the proportion of cinchona-alkaloid that the individual organ takes from the lymph-stream stand in simple relation to the relative weight of the organ ; or does it depend upon the specific qualities of the organ irrespective of weight? He therefore subcutaneously administered quinine hydrochloride, in varied individual doses, to six guineapigs and then killed the different animals at varied intervals of time ; and, selecting the lungs and the liver for comparison, he found that in every case and circumstance the proportion of alkaloid absorbed by the relatively lighter lungs was greater—in five instances from 7·6 to 9·6 times greater—than that absorbed by the relatively heavier liver. He also administered quinine-hydrochloride to one guineapig and optochin-hydrochloride to another *per os*, and here again found that the proportion absorbed by the lungs was greater—in the one case about 4·3 times, in the other case about 10·5 times greater—than that absorbed by the liver. The details of the experiments are described and tabulated.

A. A.

BOECKER (Eduard). **Ueber die Resorption des Chinins nach subcutaner und intramuskulärer Injektion.**—*Ztschr. f. Hyg. u. Infektionskr.* 1923. June 20. Vol. 100. No. 1. pp. 102–106. [8 refs.]

The author gives details of some experiments that in his opinion tend to refute the commonly accepted view that ordinary subcutaneous intramuscular injections of quinine solutions result in the establishment of local depôts of quinine, and that tend to support the contrary view that most of the alkaloid is absorbed quickly, the little that remains at the site of injection being gradually absorbed within no long limit of time. The following is a summary of the experiments :—

1. A guinea-pig of 700 gm. was killed 260 minutes after it had received a subcutaneous injection of 67 mgm. of quinine-hydrochloride in quinine-urethane solution : only 3·2 per cent. of the dose of quinine could be extracted from the tissues at the site of injection. (2) A guinea-pig of 500 gm. was killed 24 hours after it had received an intragluteal injection of 10 mgm. of quinine-hydrochloride dissolved in 0·5 ccm. of water : the tissues at the site of injection were oedematous but no quinine could be detected there. (3) A guinea-pig of 420 gm. was killed 290 minutes after it had received subcutaneously the same dose as guinea-pig No. 1 : 9·2 per cent. of the quinine was extracted from the tissues at the site of injection. (4) A guinea-pig of 375 gm. was killed 280 minutes after it had received a subcutaneous dose of 33 mgm. of quinine-hydrochloride dissolved in 1 cc. of water : 5·8 per cent. of the quinine was recovered from the tissues at the site of injection. It should be mentioned that the subcutaneous injections were made in the abdominal region and that in searching for residue of quinine the whole abdominal integument was removed and triturated.

A. A.

SLARTSCHEFF (M.). [**Ueber Wirkung des Chinins auf die Gravidität und den Geburtsakt.**] [Action of Quinine in Pregnancy and Delivery.] Sonderdruck. Sofia (Bulgarien).—[Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1923. Feb. Vol. 27. No. 1. pp. 46–47.]

According to the summary this author, writing from Sofia, finds that quinine, in therapeutic doses, has no influence on the pregnant uterus and foetus and can be given to pregnant women without anxiety; that abortion and miscarriage occurring in pregnant women after the taking of quinine are caused not by the quinine but by the high temperature due to malaria; that quinine is the best prophylactic for the preservation of the pregnant state in malaria, and very seldom acts as an ecbolic. The case is cited of a multipara of 42 who took 100 gm. of quinine without interruption of a pregnancy in the fourth month.

A. G. B.

FLETCHER (William) & TRAVERS (E. A. O.). **Quinine Idiosyncrasy and Cinchonine.**—*Brit. Med. Jl.* 1923. Apr. 14. pp. 629–630.

A lady taken ill with benign tertian malaria on June 10 was treated from June 15 with bihydrochloride of quinine 30 gr. by intramuscular injection for three days and afterwards 45 grs. daily quinine sulphate by mixture together with nine minims of liquor arsenici hydrochloricus. On July 5 a blotchy rash appeared, chiefly on exposed parts, persisting till August 31. The whole of the skin was then affected, swollen, red, dry and peeling, face bloated, small vesicles and bullae about the mouth, throat inflamed. The appearance suggested exfoliative dermatitis due to arsenical poisoning. Quinine was being taken in solution and usually vomited. Now 16 gr. of cinchonine base (Howard and Son) daily was substituted in gelatine capsules. Vomiting ceased at once, parasites disappeared, rash and swelling subsided. On December 1, when the patient was last heard of, she was in good health.

The authors, who write from the Institute for Medical Research, Kuala Lumpur, though of great experience in malaria have met no other case of pronounced idiosyncrasy to quinine and even in this case they admit a doubt. ACTON claims that members of the laevorotatory group, including quinine, have different therapeutic properties from those of the dextrorotatory group which includes cinchonine. Hence the decision to employ this drug.

A. G. B.

GRANTHAM-HILL (C.). **Notes on a Case of Idiosyncrasy for Quinine.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1922. Nov. 16 & Dec. 21. Vol. 16. Nos. 5 & 6. pp. 326–327.

A Syrian at Khartoum took ill with malaria on October 10 and received 5 gr. of euquinine. An hour later he was cyanosed with shallow respiration and pulse hardly countable; there was nausea, vomiting and diarrhoea and an urticarial rash. On recovery from these urgent symptoms he was treated with novarsenobillon and Fowler's solution but the fever was uninfluenced. Between October 17 and 25 intramuscular injections of quinine bihydrochloride were given night and morning, beginning with ½ gr. and working up to 6 gr. No intolerance was shown and the temperature came down; tinnitus was complained of. Afterwards 5 gr. of the salt was taken twice daily by mouth.

A. G. B.

Bell (Frances E.). **Hypersensitiveness to Quinine.** [Memoranda.]—*Brit. Med. Jl.* 1923. Sept. 15. p. 462.

In this case the patient, a woman, had taken a tonic dose containing 2½ grains of citrate of iron and quinine. Immediately she became giddy and faint. Within an hour painful symptoms of gastro-intestinal irritation occurred—vomiting and diarrhoea (which lasted for 24 hours). About the same time an intolerable itching began in the legs, and within a few hours the entire skin of the lower extremities from the waist to the feet turned deep red; this was followed in 24 hours by vesiculation in places, and in a few days by general desquamation. The skin of the upper extremities also suffered, but not to the same extent, nor in the same degree. The temperature ranged between 99° and 101°. It was afterwards elicited that the patient had suffered in the same way twice before from quinine in tonic doses—once 16 years ago, once 3 years ago.

A. A.

Le Comte (A.). **Chinine-Aspirine.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 3. pp. 465–467.

Le Comte gives a warning against the concurrent administration of quinine and aspirin (opening the possibility of quinotoxin intoxication), which may occur unintentionally in the tropics where many people are accustomed to take quinine on their own authority from time to time.

W. J. Bais.

Rodenwaldt (Ernst). **Zur Frage der Chininresistenz. Antwort an Victor Schilling. Siehe dieses Arch. 1923. Bd. 27. Heft 4. S. 115.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1923. Nov. Vol. 27. No. 11. p. 404.